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# COMMONWEALTH of VIRGINIA

## Virginia Nonpoint Source Pollution Management Program

2005 Annual Report  
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State Parks • Soil & Water Conservation • Natural Heritage  
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Outdoor Recreation Planning • Dam Safety & Floodplains

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## ***Introduction***

Virginia's Nonpoint Source Pollution (NPS) Management Program, led by the Department of Conservation and Recreation (DCR), is a diverse network of state and local government programs that collectively help prevent degradation of water quality and restore the health of our rivers, lakes, and bays. The Program utilizes partnerships to advance long and short-term goals for the reduction of nonpoint source pollution; through financial, technical, and outreach assistance, and local capacity building to achieve specific nonpoint source pollution control targets.

This annual report is written in response to Section 319 (h)(8) and (11) of the Clean Water Act (33 USC 1329). The 2005 *Virginia Nonpoint Source Pollution Management Annual Report* summarizes pollution prevention and control efforts throughout the state and describes the activities and accomplishments of the Commonwealth of Virginia regarding administration of Virginia's nonpoint source pollution management programs in 2005. The activities identified in this report build on previous accomplishments and set the stage for continuing Virginia's ambitious environmental agenda.

The efforts to address nonpoint source pollution highlighted in this report reflect the Commonwealth's commitment to protecting and restoring our natural resources. This annual report describes anticipated pollution reductions that will be achieved through agricultural cost-share assistance and water quality improvement projects. In addition, the report describes pollution prevention accomplishments related to implementation of the Nonpoint Source Pollution Management Program.

Reduction of various pathogens, nutrients and sediments represents a major water quality accomplishment that has been achieved through on-the-ground implementation of agricultural, urban and residential Best Management Practices (BMPs). Other accomplishments highlighted in this report help Virginia meet its responsibilities to protect and restore water quality.

The nonpoint source pollution program will continue to lead efforts to create comprehensive watershed plans across the state to help address the impacts of nonpoint source runoff, and to facilitate and/or track implementation of nonpoint source watershed planning and project efforts. These efforts will be accomplished by continuing to leverage and work with other governmental and nongovernmental partnerships, and supporting new nonpoint source control initiatives and partnerships as they arise.



## Nonpoint Source Pollution Program Overview

Nonpoint source (NPS) pollution creates significant water quality problems in Virginia. NPS pollution results mainly from stormwater runoff from land surfaces that have been affected by man's activities on areas such as farmland, city streets, construction sites, suburban lawns, abandoned mine land and areas affected by forestry harvesting practices. In Virginia, nonpoint sources of pollution are the dominant source of water quality problems compared to point sources.

Section 319 of the 1987 Federal Clean Water Act requires that states develop and implement nonpoint source pollution management programs. Virginia's Nonpoint Source Pollution Management Program is a diverse network of state and local government programs. Collectively, these programs help prevent degradation of water quality and restore the health of our lakes, rivers and bays by promoting and funding state and local watershed planning efforts, water quality monitoring, education and outreach, stream and wetland restoration, and other measures to reduce, prevent and track nonpoint source pollution loads.

The NPS program is key in promoting partnerships and inter/intra-governmental coordination to reduce nonpoint sources, and helping to bring both the necessary technical and

financial resources to local watershed management planning through the continued implementation of best management practices and restoration. The attainment of beneficial uses as measured by water quality standards compliance is the overriding purpose of control programs identified in the NPS management program.

The Virginia Nonpoint Source Management Program is coordinated by DCR as set forth in Section 10.1-10.4.1 of the Code of Virginia. DCR is responsible for the program oversight, development and implementation as well as management and distribution of federal and state funds for program implementation.

In implementing the nonpoint source pollution program, DCR receives input from the Nonpoint Source Advisory Committee (NPSAC), an interagency committee comprised of representatives of federal and state agencies. NPSAC's mission is to serve as an interagency forum to facilitate effective implementation of nonpoint source programs in Virginia and to achieve and maintain beneficial uses of water throughout the Commonwealth.

Working through the NPSAC, Virginia updated its program in 1999. The resulting "**Virginia Nonpoint Source Pollution Management Program Plan – December 1999**" describes 19 long-term goals with 80 associated objectives aimed to reduce pollution from the nine NPS source pollution categories: Watershed Prioritization, Agriculture, Forestry, Urban-Construction and Development, Monitoring and Tracking, Resource Extraction, Hydromodification, Grants and Technical Assistance Coordination, and Coastal Nonpoint Source Pollution Control.

In 2005, the Commonwealth continued to implement its NPS Pollution Management Plan by

concentrating efforts on the following priority areas:

- Water Quality Improvement Act
- Watershed partnerships
- TMDL development & implementation
- CREP and agricultural BMP cost-share programs
- Nutrient management program
- Inventory and abatement of NPS pollution from abandoned mineral mine sites
- Urban Programs
- Continued assistance for local watershed planning
- Attainment of the new Riparian Forest Buffer Initiative, under the Chesapeake Bay Program
- Protection of groundwater sources
- Continued implementation of the Agricultural Stewardship Act
- Continued development and implementation of the Coastal Nonpoint Source Pollution Program
- Continued development and implementation of the Chesapeake Bay Program.
- Continued development and implementation of the Karst Groundwater Protection Program.



### Virginia's NPS Program Mission Statement:

*To control nonpoint source pollution, to restore and protect living resources and maintain other beneficial uses of Virginia's waters, and to help assure the protection of Virginia's outstanding quality of life*



## WATER QUALITY IMPROVEMENT ACT

The *Virginia Water Quality Improvement Act (WQIA)* was passed during the 1997 legislative session of the Virginia General Assembly and signed into law on March 20, 1997. The Act established the *Water Quality Improvement Fund (WQIF)* to provide funding for water quality improvements throughout the Commonwealth. The fund is the principal source of state cost-share money to implement the nutrient and sediment reduction "Tributary Strategies" prepared pursuant to the Chesapeake 2000 Agreement and the *Code of Virginia*. The fund also provides grants for on-the-ground practices to control nonpoint source pollution in Virginia's watersheds.

The purpose of the program is to maintain and/or restore water quality standards in stream segments where NPS pollution is a significant loading factor. The outcome of cooperative NPS pollution programs has been a combination of existing efforts and new opportunities that address specific water quality impairments and improvements, supported by the public and numerous stakeholders. WQIF funds are provided, in accordance with the published WQIF guidelines, to help stimulate nonpoint source pollution reduction through the Virginia Agricultural BMP Cost-Share Program and water quality improvement projects. For fiscal years 2005 and 2006, a total of \$36.9 million became available through the WQIF for NPS implementation. Table 1 summarizes available WQIF funds. The funding is made available for four categories of nonpoint source

Table 1: FY05-FY06 WQIF - Available Funds		
Funding Source	FY2005	FY2006
Governors Budget WQIF*	\$ 1,917,500	\$ ---
WQIF General Assembly 2005 Actions*	\$ -	\$ 22,664,600
WQIF General Assembly Amended Budget	\$ 7,500,000	\$ 7,500,000
VMRC Dredging Fund 2004	\$ 863,187	\$ ---
Income Tax Check-off – Chesapeake Bay Restoration	\$ 230,000	\$ ---
Subtotal	\$ 10,510,687	\$ 30,164,600
*15% Reserved for "Rainy Day Fund"	\$ (287,625)	\$ (3,399,690)
<b>TOTAL WQIF AVAILABLE FUNDING</b>	<b>\$ 10,223,062</b>	<b>\$ 26,764,910</b>

pollution control projects, summarized in Table 2 below. The majority of the funding allocation is to support the first two categories, the Agricultural Cost-Share Program and the Conservation Reserve Enhancement Program. From FY2005 and FY2006 WQIF allocations, over \$26 million is allocated to the Agricultural BMP Cost Share Program and \$4.7 million to the Conservation Reserve Enhancement Program.

An allocation of \$260,000 to WQIF from the Virginia Marine Resource Commission Dredging Fund will be used for administrative support providing funding for two full time employees over two years to manage and administer WQIF programs and related implementation initiatives.

### NPS Programs & Project Support

The planned use of available funds also includes approximately \$5.7 million in funding to be made available for other nonpoint source implementation projects. These funds will be distributed through grant

agreements with the Department of Forestry for forestry initiatives, and to other project sponsors selected through a competitive process to fund other priority implementation programs. The competitive grants will be awarded through two programs described in the WQIF Guidelines: Water Quality Initiative Projects and Cooperative Nonpoint Source Pollution Program Projects with Local Governments. Funding for these categories of projects will be awarded through the FY2006 WQIF Request for Grant Applications.

### Department of Forestry

In partnership with the Department of Forestry (DOF), a total of \$500,000 in WQIF funding will support forestry nonpoint source pollution programs to promote increased riparian forest buffer plantings, stream restoration, urban tree canopy restoration, and stormwater mitigation projects. This program targets watersheds containing Total Maximum Daily Load (TMDL) stream segments, streams named in the Virginia 303(d) list or

Table 2: Planned Use of Available FY05-FY06 WQIF Funds		
WQIF Program Funding	FY2005	FY2006
Agricultural BMP Cost Share Program	\$ 6,233,062	\$ 20,000,000
Conservation Reserve Enhancement Program	\$ 2,230,000	\$ 2,514,910
Administrative Support	\$ 260,000	\$ -
NPS Programs, Projects, & Competitive Grants	\$ 1,500,000	\$ 1,250,000
Cooperative NPS Local Programs	\$ -	\$ 3,000,000
<b>TOTAL FUNDING ALLOCATIONS</b>	<b>\$ 10,223,062</b>	<b>\$ 26,764,910</b>



other priority watersheds as delineated by state agency criteria.

DOF funding though WQIF will be used to support a pilot silvicultural best management practice cost-share program. In addition, DOF will offer an open request for proposals to fund urban canopy demonstration projects, streamside restoration including riparian forest buffer plantings, riparian forest buffer plantings where Conservation Reserve Enhancement Program (CREP) is not eligible, and vegetative stormwater mitigation projects such as "rain gardens." Nonpoint source pollution reduction data will be reported for all projects supported with WQIF funding.

#### FY06 Request for Grant Applications

DCR is promoting urban best management practices and support for local nonpoint source pollution program through a request for grant applications. Projects from local governments and other entities will be awarded funding for projects that reduce water quality impacts of urban, suburban, and rural developed lands. On October 14, 2005, DCR issued the FY2006 Water Quality Improvement Fund Request for Grant Applications. A total of 102 proposals requesting over \$10 million in FY2006 WQIF money were received by the postmarked deadline of December 15, 2006. This funding request was matched with over \$14 million in non-state funding. Future WQIF funding requests for FY2007 and beyond were approximately \$8.5 million. Initial calculations show that over \$7 million in funding was requested from 75 project sponsors in the Chesapeake Bay watershed, over \$2 million was requested in the Southern Rivers watersheds from 25 project sponsors, and several project sponsors with proposals with statewide application or that fall into both major watershed areas requesting approximately \$700,000.

#### 1) Strategic NPS Water Quality Initiatives

Approximately \$1.7 million of FY2006 funding is available for the *Strategic Nonpoint Source Water Quality Initiatives*. Proposals for this program were accepted from state agencies, educational institutions, local governments, planning district commissions, soil and water conservation districts, nonprofit organizations and individuals (defined as any corporation, foundation, association or partnership of one or more persons.) The types of projects being considered include the implementation of demonstration projects for:

- Stormwater management retrofits
- Promotion of better site design, low impact development, cluster development
- Replacement of failing septic systems
- Streambank restoration
- Buffer protection or long-term water quality easement programs
- Alternative animal waste management solutions
- Restoration projects with measurable water quality improvements

DCR has made an initial commitment under the Strategic Water Quality Initiatives Program to support a pilot project with Virginia Tech, *Precision Phosphorus Feeding: Targeted Environmental Solutions for Virginia Dairy Farms*, which will offer incentive payments for farms to reduce overfeeding of phosphorus. Approximately three hundred producers will be enrolled in a scaled incentive program, with payments up to \$12 per milking cow per year for two years for producers feeding less than 5% excess phosphorus. Reduced overfeeding of dietary phosphorus is a technique to reduce phosphorus excretion. Results of the project would be shared widely with dairy producers in websites, seminars and field days.

#### 2) Cooperative NPS Programs with Local Governments

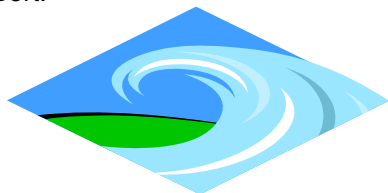
DCR intends to make funds available for long-term NPS pollution reduction initiatives by localities through the Cooperative Nonpoint Source Pollution Program with Local Governments. Approximately \$3 million in FY2006 WQIF funding will be awarded available to cities, counties, and towns. Long-term proposals were accepted for projects that identify specific requests for WQIA funding from future FY2007, FY2008, and FY2009 WQIF appropriations. Projects selected for funding must have included an on-the-ground implementation component as well as at least one other component addressing program enhancement or capacity building. Projects must address implementation aspects of the Virginia Tributary Strategies, TMDL restoration (implementation) plans, or significant NPS reduction programs to improve water quality. Example project areas include the development and implementation of:

- Stormwater management plans and ordinances that enhance state requirements
- Programs resulting in permanent protection of riparian buffers
- Local stream rehabilitation & protection programs
- Nutrient management planning & implementation programs
- Septic system pump out, repair, or replacement programs
- Local government wetland rehabilitation & restoration programs



## Highlights and Accomplishments

The Virginia Department of Conservation and Recreation has experienced many successes in managing nonpoint source pollution over the past year. The accomplishments of Virginia's NPS Programs are summarized in this report.

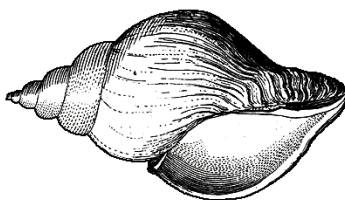


## WATERSHED PRIORITIZATION

The Watershed Prioritization goals established in the 1999 the *Nonpoint Source Pollution Management Program* specified having a well integrated and coordinated basin-planning and management program and developing TMDL plans and implementation Strategies. There is a growing recognition among state agencies, local governments and community organizations of the importance of watershed management in helping the Commonwealth of Virginia protect and restore water quality in the Chesapeake Bay and in our rivers, streams, and lakes. Watershed offices were established to improve local delivery of nonpoint source pollution control programs and to foster and coordinate watershed management. They also provide the framework needed to meet the Commonwealth of Virginia's long-term

watershed prioritization and management goals.

This section of the annual report highlights watershed management activities within major river basins of the Commonwealth. In addition, it summarizes the successful conservation partnerships between the Commonwealth of Virginia and the various Soil and Water Conservation Districts that provide valuable assistance to farmers, individuals and localities in implementing NPS programs. This section also summarizes the TMDL activities that occurred during 2005.



## Cooperative Watershed Programs and Watershed Basin Planning

Watershed-based cooperative nonpoint source pollution implementation initiatives and watershed basin planning are coordinated for each of the major river basins through the roundtables. The Virginia Watersheds Alliance, a new organization that includes all 13 major river basins in Virginia, was prompted into existence by Senate Bill 1141 and is gaining momentum. They meet monthly by teleconference and occasionally in person to address mutual water quality issues. The Virginia Watersheds Alliance is in the process of attaining 501(c)(3) status. An update on 2005 activities for each of the major basins and their roundtables is provided below.

### **Albemarle Sound**

The Southern Watershed Area Management Program (SWAMP), hosted by the Hampton Roads Planning District Commission

continues to work with the Albemarle-Pamlico National Estuary Program (APNEP) in an effort to exchange planning and environmental management information with the neighboring North Carolina counties. Utilizing the Multiple Benefits Conservation Plan and the Conservation Corridor Plan previously developed by the SWAMP is currently working with the cities of Virginia Beach and Chesapeake on any possible wetland mitigation as a result of the proposed Southeastern Parkway Project. The Multiple Benefits Conservation Plan is designed as a strategy for increasing the number and type of benefits derived from wetland compensation and other types of conservation in the Southern Watershed Area.

### **Big Sandy River Basin**

The Big Sandy River Basin Coalition (BSRBC) is currently planning for their annual meeting scheduled for April 2006. Several ongoing efforts will be culminated at that time, one of which involves an increase in the number of directors from five to twenty one (21). This will enable each state (Kentucky, West Virginia, and West Virginia) to have seven directors and operate independently of one another to take advantage of funding sources that may be available only to any one of the individual states (i.e., PRIDE funds in Kentucky and WQIA funds in Virginia). At the same time, the umbrella organization (BSRBC) remains intact and is actually strengthened because the new arrangement provides more flexibility for autonomy and is more likely to yield positive results. The BSRBC Board recently met to further galvanize partnership efforts with the Ohio River Sanitation Commission (ORSANCO), a regulatory entity that has the potential to assist the BSRBC in applying pressure to certain localities in Kentucky and West Virginia that have traditionally ignored water quality regulations.

### **Chowan River Basin**

The Chowan Roundtable continues to work on capacity building with the Albemarle-Pamlico National Estuary Program in both the Virginia and North Carolina portions of the Chowan watershed. In September 2005, the Chowan Roundtable in coordination with the Chowan Basin Soil and Water Conservation District (SWCD) and the Blackwater / Nottoway River Keepers Association completed Chowan Study Area Implementation Plans for the Nottoway, Blackwater and Raccoon areas. In addition, DCR has added to the states natural area preserve system by the acquisition of 216 acres in 2005 in Sussex and Prince George counties and the Nottoway River Watershed.

### **Eastern Shore**

Implementing NPS components of the *Eastern Shore Tributary Strategy* has been a cooperative team effort between the state and federal natural resource agencies and the Eastern Shore Watershed Network (ESWN). The ESWN is a diverse group of Eastern Shore stakeholders including the Eastern Shore Soil and Water Conservation District, staff of Accomack and Northampton counties, Accomack-Northampton Planning District Commission, Eastern Shore Resource Conservation & Development Council, the Eastern Shore Coast Keeper and citizens. The ESWN's role includes logistics, outreach, and implementation planning for the tributary Strategies.

This group, which services as the Tributary Strategy team for the region, has been meeting regularly to develop an effective regional approach to implement the restoration targets listed in the Eastern Shore Tributary Strategy Input Deck. Using the state's *Eastern Shore Tributary Strategy* NPS implementation plan as a guide a number of actions have been accomplished. Implementation of agricultural best management practices (BMPs) has increased as a result of the increase in cost share

allocations to the Eastern Shore Soil and Water Conservation District. Urban, or non-agricultural, implementation is continuing at a slower pace due to resource limitations. As part of Tributary Strategy Implementation Planning the Eastern Shore SWCD and the Accomack-Northampton Planning District Commission (PDC) have developed a GIS tool to analyze and map the presence or absence of vegetative shoreline buffers along the blue line streams in the Chesapeake Bay watershed in Accomack and Northampton counties. An effort to access the cumulative impacts of land use practices that may be affecting the tidal waters of the Eastern Shore of Virginia is being planned. The baseline information will be assembled in a single database by watershed for the bayside Virginia Eastern Shore. This information will be placed in GIS format that can be used by planning commissions, wetlands boards and boards of zoning appeals when reviewing proposals and applications.

### **Lower James River & Lynnhaven Coastal Basins**

The implementation of the nonpoint source pollution components plan for the Lower James and Lynnhaven portions of the *Chesapeake Bay Nutrient and Sediment Reduction Tributary Strategy for the James River, Lynnhaven and Poquoson Coastal Basin* has been a cooperative team effort between the state and federal natural resource agencies and the Lower James River Roundtable, the Hampton Roads local governments Chesapeake Bay Committee and the Hampton Roads Stormwater Committee, hosted by the Hampton Roads Planning District Commission (HRPDC). This Tributary Strategy team has been meeting regularly to develop an effective regional approach to implement the restoration targets listed in the Lower James River Tributary Strategy Input Deck.

Agricultural implementation has increased as a result of the increase in cost share allocations to the Peanut and Virginia Dare Soil and Water Conservation Districts. Urban, or non-agricultural, implementation is continuing at a slower pace due to resource limitations.

Regional environmental organizations, including the Elizabeth River Project and Lynnhaven 2007, are working with business and landowners to help reduce stormwater runoff through BMP demonstration projects such as installing rain gardens on school grounds for use as outdoor classroom and working with homeowners on backyard buffer and living shoreline initiatives. Subcommittees have been working with the HRPDC staff to develop regional consensus on the technical aspects and specific studies on street sweeping and bacteria sampling protocols.

### **Piedmont James Tributary Strategy Roundtable**

The Piedmont James Tributary Strategy Roundtable is now in its seventh official year of functioning since the tributary Strategies development process began. The steering committee continues to meet regularly to communicate, exchange and disseminate information addressing the strategy and water quality issues. The group oversees and directs their consultant in meetings with local government staff, officials and with presentations to local boards of supervisors, planning commissions and PDC members. A tri-fold brochure was developed and work was completed on their website which serves as a primary communication tool for the roundtable. In May 2005, the roundtable sponsored a regional social marketing campaign related to proper fertilizer application, which aired on NBC Channel 12.

### **Potomac River Basin**

The Potomac Roundtable, a Northern Virginia area roundtable, has been



very involved this year in the support of the Potomac Tributary Strategy. This DCR supported roundtable hosted a successful Potomac Forum IV for over 200 Northern Virginia stakeholders in late August at George Mason University's Prince William Campus. Presentations from DCR and DEQ on the Tributary Strategy Implementation Plan for both point and nonpoint sources of pollution were highlighted. Numerous local governments presented talks on successful nonpoint source implementation efforts such as green roofs, urban nutrient management, street sweeping, and continuous no-till to name a few. The roundtable also established a website for members that includes meeting minutes and presentations for quarterly roundtable meetings. Both of these outreach efforts help keep the Northern Virginia area informed of important state efforts.

In addition, this past year, DCR Potomac Watershed nutrient management staff wrote a total of 57 agricultural nutrient management plans in the Potomac and Shenandoah basin covering 7,796 acres. Plans were prioritized according to the Tributary Strategy document as well as the Department of Environmental Quality 303(d) - impaired streams list. In the urban area, DCR Potomac Watershed staff lead the state in working with local governments as well as state and federal staff in developing urban nutrient management plans on publicly owned land as well as private golf courses. Outreach to major fertilizer companies such as Scott's™ concerning re-labeling homeowner bags to include a water quality message was also successful.

#### **New River Basin**

The New River Watershed Roundtable over the past year has finalized its structure and elected Board members. The organization has approved its *Articles of Incorporation*

and is proceeding with obtaining its 501(c)(3) status. DCR through grant funding has established a Watershed Field Coordinator position to help the organization with facilitating projects for outreach and on-the-ground nonpoint source pollution reductions. Currently the Roundtable is assisting applicants in applying for the most recent WQIF grant. In December, the Roundtable will solidify its committee assignments.

#### **Rappahannock River Basin**

The Rappahannock River Basin Commission has taken the lead on regional efforts to more specifically define how the Rappahannock Tributary Strategy can be implemented at the local level. This Nonpoint Source Workgroup, as part of the Commission, is comprised of a broad range of stakeholders from throughout the watershed. This workgroup has had presentations and discussions ranging from responsibility of Tributary Strategy implementation to development of implementation tools for local governments. With these discussions underway, the next step will be to more actively engage the Commission members, and ultimately, each local government into enhancing specific local programs, such as stormwater and land use planning.

An estimated 135 regional representatives made up of city council members, county boards of supervisors, nonprofit representatives, developers, and other community leaders participated in a 1-day regional planning and visioning exercise. The participants were asked to go through a visioning process and identify how the Fredericksburg region should be developed over the next 25 years. As part of this process, the participants established ground rules of development. The only one of these ground rules widely accepted by all participants was protection of the Rappahannock River. This visioning exercise is to be compiled and presented to each local government in

the RADCO region over the next year with the hope of improving regional planning efforts among these localities.

#### **Shenandoah River Basin**

The Shenandoah Pure Water 2000 held a two-day meeting on June 17-18, 2005 to discuss major issues in the watershed. More than 70 representative stakeholders from throughout the watershed attended the annual conference "Building a Watershed Community." Agenda items included water supply, land conservation, open space planning, and conservation easements. In addition, over twenty breakout sessions addressed a range of topics of concern to attendees including fish kills, water law, development, comprehensive plans, citizen engagement, and future Strategies. A plan was discussed as to what courses of action needed to take place to protect the watershed. In fall 2005, Pure Water 2000 hosted a forum to discuss the fish kill on the South Fork of the Shenandoah. The history of fish kills was discussed as well as what measures can be taken to avoid this in the future. The meeting resulted in DEQ offering to conduct more analytical monitoring in the future.

#### **Upper James River Basin**

The Upper James Roundtable is proceeding with its application to become a Resource Conservation & Development Council under the name of Mountain Waters RC&D. If the roundtable achieves the RC&D status it is expected to receive federal funding for 1.5 employees to provide technical assistance and administrative support. The roundtable also hosted a workshop at Lake Moomaw with topics including water quality/quantity, historical resources, and the lake's importance as a recreational attraction. Discussions as to what significant changes may be occurring in the future were also held.

### **Upper Roanoke River Basin**

The Upper Roanoke River Roundtable helped organize the Fall Roanoke River Clean-up and Celebration held on October 1, 2005. The event was a huge success with a good turnout, and an excellent review in the *Roanoke Times*, as an effective clean-up. An estimated 24 tons of trash were pulled from streams and stream banks by over 350 volunteers and collected by the City of Roanoke. The roundtable remains very active in supporting the Virginia Save Our Streams program. The Upper Roanoke River Roundtable received the Water For Life award from the Southeastern Rural Community Assistance Program (RCAP) during the National Drinking Water Week luncheon held on May 4, 2005 at Hotel Roanoke. The award was in recognition of the Roundtable's contribution to enhance the quality of life in the community. Three board members attended the luncheon and awards ceremony.

### **Upper Tennessee River Basin**

The Upper Tennessee River Roundtable (UTRR) has one year remaining in the three-year EPA grant that was received in 2003. Many projects are underway as the UTRR is trying not only to achieve the objectives, but also exceed them. Although implementation is in full swing for the EPA Grant, they are beginning to realistically consider "life after the EPA Grant" by searching for other grant possibilities through the Highlands Action Program, the Water Quality Improvement Fund, and other sources.

The UTRR recently hired a coordinator to implement the "Assign-A-Highway" Program, which uses probation and parole labor to pick up litter on court-appointed highway segments. The program is working remarkably well. They hope to expand the program statewide. Growth Readiness Training is underway in Tazewell County and about to begin in Wise County. A

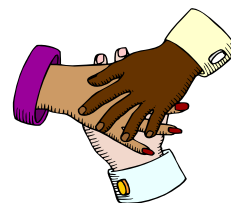
partnership consisting of the Southeast Watershed Forum, the Tennessee Valley Authority, the DCR, and the UTRR has been actively arranging training and workshop sessions with local governments to help them understand and plan for development to reduce the potential negative effects on water quality that come from over-developing a watershed. A WQIA workshop was held on November 1, 2005 in which approximately 45 people attended – most of which were representatives from local governments (towns and counties). As a result, new partnerships were formed as many people met for the first time and realized how their cooperative efforts could increase the likelihood of success.

### **York River and Small Coastal Basin**

A priority of the York River and Small Coastal Basin Roundtable for 2005 was to reestablish this group, which was accomplished with the adoption of a mission statement at their meeting in April 2005. The Middle Peninsula Planning District Commission has played a leading role in coordinating roundtable communication by establishing a database of participants and stakeholders as well as establishing and maintaining the roundtable's website, <http://www.yorkwatershed.org/>.

Throughout 2005, the York River and Small Coastal Basin Roundtable held several meetings to educate stakeholders and to critically discuss and analyze regional nonpoint source issues. The water quality education related forums have focused on stormwater and low impact development, nutrient trading, forest harvesting practices, and onsite disposals systems. The goal thus far has been to raise awareness of forum participants, with the future goal to be to better engage local governments to ensure that they have the knowledge and available tools to most appropriately address nonpoint source

pollution. Watershed planning continues to be a positive factor in the York and coastal watersheds. A regional workshop, including PDCs, SWCDs, EPA, DCR, and local government representatives is scheduled to take place in February 2006. This workshop will build upon past successful watershed planning efforts, such as Dragon Run, and to expand watershed planning to encourage greater participation by more localities.



### **Virginia Conservation Partnerships**

Virginia's 47 Soil and Water Conservation Districts (SWCDs) have served the Commonwealth for approximately 70 years. The partnership of natural resource conservation agencies is one of mutual reliance with each partner fulfilling a niche that supports agency missions and support of partner goals. This cooperative relationship provides efficient delivery of natural resource programs and services to landowners.

Along with DCR, the primary partners of the Virginia Conservation Partnership are SWCDs and the US Department of Agriculture's Natural Resources Conservation Service (NRCS). SWCDs provide local connections with landowners and the farming community. NRCS provides technical expertise for the installation of conservation best management practices. DCR supports SWCDs with training, guidance, and financial assistance to help achieve the Commonwealth's water quality goals.

The SWCDs were established in the 1930s to develop comprehensive programs and plans to conserve soil

resources, control and prevent soil erosion, prevent floods and conserve, develop and utilize water. Since the mid-1980s, DCR has relied heavily on districts to help deliver many programs aimed at controlling and preventing NPS pollution. With their volunteer boards and more than 150 full and part-time technical and administrative employees, districts provide a valuable delivery system for Virginia's statewide NPS prevention programs.

Key SWCD NPS efforts include: implementation of the Virginia Agricultural BMP Cost-Share Assistance Program, local assistance with delivery of erosion and sediment control ordinances, conservation planning assistance and plan approval of farm plans in accordance with state and local requirements, provide technical expertise for design and installation of farm conservation practices implemented voluntarily by Virginia farmers, and the education of clients through field days, public meetings and classroom programs.

During 2005, SWCD Boards, with support from DCR staff, conducted hundreds of monthly board meetings and sponsored hundreds of technical training sessions and conservation demonstrations, tours, and events. With DCR funding and oversight, SWCDs targeted millions of dollars to address significant agricultural water quality problems in high priority watersheds. SWCD staff fulfills established roles with local governments as they cooperatively implement ordinances that control sediment from predominantly urban construction and development. In addition, districts play a significant role in coordination and delivery of services that support implementation of county ordinances including agricultural provisions of local Chesapeake Bay Preservation Act ordinances and assist with implementation of Virginia's Agricultural Stewardship Act.



## Total Maximum Daily Load Program

Virginia's goal is that all rivers, lakes, streams and tidal waters attain the appropriate beneficial uses. These beneficial uses are described by the following use goals: drinking water, primary contact/swimming, fishing, shellfishing, and aquatic life. These uses are protected by application of the state's numeric and narrative water quality criteria. When the beneficial uses are not being met these waters are considered "impaired" and the state must take steps to meet water quality standards ensure that water quality is restored. One very important step in restoring water quality in the impaired streams is the development of Total Maximum Daily Loads, or TMDLs.

A TMDL study identifies sources of pollution and reductions needed from the identified pollutants to attain water quality standards. Pollution from both point sources such as residential, municipal, or industrial discharges and nonpoint sources such as residential, urban, or agricultural runoff are included in the TMDL study.

A 1999 Federal Court Consent Decree order established a schedule for TMDL development in Virginia through 2010 for waters identified as impaired since 1998. For other waters, Virginia schedules the development of TMDLs within eight to twelve years of finding the waters impaired. Since 1999, DEQ, DCR, Virginia Department of Health (VDH) and Department of Mines, Minerals and Energy (DMME) have developed plans, with public input, to restore and maintain the water quality of the impaired waters.

These plans establish a "total maximum daily load," or TMDL, for the impaired waters. The agencies have also developed TMDL implementation plans and work with stakeholders to reduce pollution as required by the TMDLs.

In January 2005, DEQ, in cooperation with DCR and DMME, released a report that describes the 5-year progress of TMDL development, implementation plans and the application of best management practices in Virginia's TMDL program. The report is available on DEQ's website at [www.deq.virginia.gov/tmdl](http://www.deq.virginia.gov/tmdl).

### **TMDL Development**

The Virginia TMDL program to date has successfully met the demands of a rigorous development schedule. Table 1 below summarizes the TMDLs that have been developed. The program completed 255 TMDLs for free flowing stream segments and 24 shellfish closure TMDLs from 1999 to December 2005. Approximately 149 have been contracted for completion by May 1, 2006. Just over 300 waters remain and are scheduled for TMDL development by 2010.

Table 1 –TMDL Development		
Status TMDLs	Consent (672)	Non-Consent
1999-2004	202	18
2005	53	
2006	109	40
<b>Shellfish</b>		
1999-2004	24	0
2005 submitted to EPA	38	0
2006 to submit	26	0

For non-consent decree impaired waters, the program has 40 waters under contract for TMDL development by May 1, 2006. The program has scheduled TMDL development for the remaining 902 waters within eight to 12 years of when the water was designated impaired.



### Implementation Plans

Once the TMDL study (i.e., development phase) is complete, the report is submitted to EPA for approval. Following EPA's approval of the TMDL a TMDL Implementation Plan (IP) is developed. Virginia law requires the development of an IP. There is not a mandated schedule as to when an IP is to be developed upon approval of the TMDL. Local or state agencies, as well as community watershed groups, can take the lead in developing TMDL IPs. IPs describe ways to reduce pollution levels in the stream, and includes a schedule of actions, costs and monitoring.

The TMDL program has completed 11 IPs covering 33 segments and scheduled 12 IPs covering a total of 42 segments for completion by 2006. Completion of the 544 consent order waters and 902 non-consent order waters will be dependent upon available funding and staff. (Table 4)

**Table 4 – Summary IP Development**

Status Plans	# of Plans	# of Segments
Completed	11	33
Scheduled	12	42

Work continued on the development of IPs for TMDLs in 2005 by DCR and DEQ. Table 5 above summarizes the IPs that were funded by DCR in 2005 and their status. Most of these will be completed by early Spring 2006.

**Table 5 – Status of Implementation Plan (IP) Development**

Watershed (# of TMDLs)	Location	Impairment	Status of IP
Willis River (1)	Buckingham and Cumberland Counties	Fecal coliform	Completed August 2005
Cooks Creek and Blacks Run (4)	City of Harrisonburg & Rockingham County	Fecal coliform, benthic	Draft
Big Otter (5)	Bedford and Campbell Counties	Fecal coliform	In progress
Lower Blackwater, Maggoddee and Gills Creek (3)	Franklin County	Fecal coliform	Completed Jan 2006
Thumb, Run, Deep Run, Carter Run, Great Run (4)	Fauquier County	Fecal coliform <i>E. coli</i>	Draft
Little Creek and Beaver Creek (3)	City of Bristol, Washington County	Fecal coliform, <i>E. coli</i> , benthic	In progress
Dodd Creek and Mill Creek (2)	Floyd and Montgomery Counties	Fecal coliform	In progress

Implementation has already started in the Willis River and Lower Blackwater, Maggoddee Creek and Gills Creek (to begin in March 2006) and the others will begin implementation during 2006.

### Implementation Projects

The TMDL implementation program has been working in 9 watersheds, and 3 have shown improvement in water quality (Table 6). Two other watersheds with completed and IPs (Middle Creek and Quail Run) have also shown water quality improvements. It is too early in the implementation process to determine if water quality is improving in the other watersheds. There are six TMDL watershed implementation projects that are being managed by the Virginia Department of Conservation and Recreation. Two of

these projects (Holmans Creek and Catocin Creek) began in January 2005. The *Willis River TMDL Implementation Project* began in August of 2005. The three additional TMDL implementation projects are the original "Pilot Projects" that began in late 2001 and completed their fourth year of implementation in 2005.

### New Implementation Projects

**Holmans Creek** - (Shenandoah and Rockingham Counties) The *Holmans Creek TMDL Implementation Project* started in 2005. DCR, in conjunction with the Lord Fairfax Soil and Water Conservation District (LFSWCD) began a 5-year TMDL implementation project to reduce fecal coliform and address a benthic impairment through implementation of agricultural, and residential best management

**Table 6: Status of TMDL/ Watershed Implementation Projects**

Watershed or Location of Implementation activities	Pollutant source	Water quality Improvement	Year Project Began	Lead Agency
North River/Rockingham County	Ag., Residential & NPS	Some improvement	2001	DCR
Middle Fork Holston River/Washington County	Ag., Residential & NPS	Moderate improvement	2001	DCR
Upper Blackwater River/Franklin County	Ag., Residential & NPS	Some improvement	2001	DCR
Catocin Creek/ Loudoun County	Ag., Residential & NPS	Too early to determine	2005	DCR
Holmans Creek/Rockingham/Shenandoah Co.	Ag., Residential & NPS	Too early to determine	2005	DCR
Willis River/Cumberland County	Ag., Residential & NPS	Too early to determine	August 2005	DCR
Four Mile Run/Arlington and Fairfax counties	Urban, nonpoint	Too early to determine	Nov. 2002	DEQ
Middle Creek/Tazewell County	Coal mining activities	Definite improvement	N/a	DMME
Quail Run/Rockingham County	Point source	Definite improvement	N/a	DEQ



practices (BMPs). In 2005 the Holmans Creek Joint Committee was developed and hired both an agricultural and a residential TMDL coordinator to lead the implementation efforts.

During 2005 various public meetings were held to promote the project. These resulted in:

- 6900 linear feet of stream fencing installed (SL-6)
- 343 acres of small grain cover crop planted (SL-8B)
- 5.1 acres of land enrolled in CREP (CP-22)
- 5.1 acres of riparian forest buffer installed (CRFR-3)
- 34 residential septic BMP's approved and scheduled and 4 completed.

BMPs either installed or contracted during this year resulted in the following pollution reductions: 110 tons of sediment, 182 pounds of phosphorous, 925 pounds of nitrogen and 4.726E+10 cfu/100ml of fecal coliform bacteria. BMP Implementation for 2005 in Holmans Creek is summarized in Table 7.

**Catoctin Creek** - An IP for the bacterial impairments for the North Fork, South Fork and mainstem of Catoctin Creek in Loudoun County was completed in late 2004. DCR, in conjunction with the Loudoun Soil and Water Conservation District (LSWCD) and Loudoun County Health Department (LCHD), commenced a 5-year project to reduce fecal coliform in four impaired stream segments in the Catoctin Creek Watershed and to proactively address benthic impairment in one of the creeks, through implementation of agricultural, and residential BMPs. BMP Implementation for 2005 in Catoctin Creek is summarized in Table 8.

During 2005 various public meetings and tours, 50 farm visits, newspaper articles and other outreach activities were held to promote the project.

**Table 7 - BMP Summary for the Holmans Creek Watershed**

Control Measure	Units	Estimated Units Needed	2005 units installed	Project Total
<b>Agriculture Program</b>				
Stream Exclusion Fencing	Feet	279,480	6,900	6,900
Sinkhole Fencing	Feet	16,000	0	0
Conservation Tillage	Acres/yr	569	0	0
Cover Crop	Acres/yr	660	343.1	343.1
			5.5	5.5
<b>Residential Program</b>				
Septic System Pump Out	System	200	2	2
Septic System Repair	System	25	1	1
Septic System Installation	System	25	0	0
Alternative Waste Treatment System	System	25	0	0
<b>Total On-Site System Installation</b>	<b>System</b>	<b>75</b>	<b>1</b>	<b>1</b>

These resulted in:

- 8 cost-share contracts written for 7,000 linear feet of stream fencing
- 6 stream protection practices and 1 grazing land protection practice were completed resulting in more than 4,925 feet of exclusion fencing
- 10 residential septic BMPs approved and scheduled and 6 completed.

BMPs either installed or contracted during this year resulted in the following pollution reductions: 28 tons of sediment, 43 pounds of

phosphorous, 226 pounds of nitrogen and 3.149E+13 cfu/100ml of fecal coliform bacteria.

**Willis River** – DCR, with extensive input from the Buckingham and Cumberland County governments, DEQ, VDH, Virginia Cooperative Extension (VCE), NRCS, Peter Francisco Soil and Water Conservation District (PFSWCD), James River Association (JRA), Farm Bureau and MapTech, Inc. have developed a 5-year TMDL project to reduce fecal coliform levels in the

**Table 8 - BMP Summary for the Catoctin Creek Watershed**

Control Measure	Units	Estimated Units Needed <sup>1</sup>	2005 units installed	Project Total
<b>Agriculture Program</b>				
Stream Exclusion Fencing	Feet	168,960	6,002	6,002
Forested Riparian Buffer	Acres		4.8	4.8
<b>Residential Program</b>				
Septic System Pump Out	System		3	3
Septic System Repair	System	3	3	3
Septic System Installation	System	7	0	0
Alternative Waste Treatment System	System	10	0	0
<b>Total On-Site System Installation</b>	<b>System</b>	<b>20</b>	<b>3</b>	<b>3</b>

<sup>1</sup> Numbers for septic system installation and alternative waste treatment systems are projected measures to correct 20 straight pipes.

Willis River through implementation of agricultural and residential BMPs in accordance with an approvable TMDL IP. The Willis River (HUC 02080205, VAC-H36R-01) is part of the James River Basin, located in Cumberland County and Buckingham County, Virginia.

In August of 2005 a TMDL Conservation Specialist was hired to lead implementation efforts in the watershed. During this period, 3 grazing land protection practices were completed, excluding 140 beef cattle from more than 1,100 feet of stream. An additional 5 grazing land protection practices are currently under contract representing the potential exclusion of 405 beef cattle and 200 sheep from approximately 23,700 feet of stream.

Outreach and educational efforts completed during this period include presentations to more than 120 landowners and the development of a brochure explaining the Willis River project and opportunities for landowner involvement. The following accomplishments were reported for the first half of 2005 (Table 9):

- 3 grazing land protection practices completed and 5 grazing land protection practices under contract.
- District staff made 16 farm visits during this period to promote conservation practices in the impaired watersheds.
- The District co-sponsored a Forage and Fencing Workshop in Cartersville, Virginia. Information packets about the project were distributed to more than 40 landowners.
- The District sponsored an informational meeting and dinner introducing the Willis River Project at the Buckingham County High School. 85 landowners attended.

### Pilot Implementation Projects

Calendar year 2005 was the fourth year of BMP implementation for the three "pilot" TMDL implementation projects that were initiated in late 2001. These projects are based on

TMDL implementation plans that were

Table 9 - BMP Summary for the Willis River Watershed				
Control Measure	Units	Estimated Units Needed	2005 units installed	Project Total
<u>Agriculture Program</u>				
Stream Exclusion Fencing	Feet	475,200	1,151	1,151
Forested Riparian Buffer	Acres		0.9	0.9
<u>Residential Program</u>				
Septic System Pump Out	System	100	0	0
Septic System Repair	System		0	0
Septic System Installation	System	4	0	0
Alternative Waste Treatment System	System	1	0	0
<b>Total On-Site System Installation</b>	<b>System</b>	<b>5</b>	<b>0</b>	<b>0</b>

developed for bacteria impairments on 13 stream segments. The number of BMPs implemented in the North River, Blackwater River, and Middle Fork Holston River watersheds from 2001 through 2004 are summarized in Tables 9-11 on the next two pages. The numbers of BMPs implemented in 2005 are also reported. The specific BMPs by impaired stream segment and the load reductions achieved are provided to EPA Region III semi-annually.

**North River** - DCR, in conjunction with the Shenandoah Valley Soil and Water Conservation District (SVSWCD) in Rockingham County, Virginia, continued to implement its 5-year TMDL project to reduce fecal

coliform, and nitrate levels and address benthic impairments in four creeks that drain to the North River (Dry River, Muddy Creek, Pleasant Run, and Mill Creek) through implementation of agricultural and residential BMPs in accordance with previously published and approved TMDLs and a TMDL watershed IP. North River is a tributary of the South Fork of the Shenandoah River (HUC 02070005), which in turn is a tributary of the Potomac River, which discharges into the Chesapeake Bay. The project area is located approximately 3-5 miles west or southwest of Harrisonburg, VA, in Rockingham County.

TMDL staff at the Shenandoah Valley

Table 10 - BMP Summary for the North River Watershed				
Control Measure	Units	Estimated Units Needed	2005 units installed	Project Total
<u>Agriculture Program</u>				
Stream Exclusion Fencing	Feet	612,480	2,906	32,981
Vegetative Cover on Critical Areas	Acres	5,154	0	876
Forested Riparian Buffer	Acres		2.3	26.5
Nutrient Management Practices	Acres		157	515.1
Cover Crop	Acres		587.9	587.9
Vegetative Cover on Cropland	Acres		20.2	36.6
<u>Residential Program</u>				
Septic System Pump Out	System		15	21
Septic System Repair	System	10	4	10
Sewer Connections	System		0	0
Septic System Installation	System	17	1	4
Alternative Waste Treatment System	System	27	2	5
<b>Total On-Site System Installation</b>	<b>System</b>	<b>54</b>	<b>7</b>	<b>19</b>

SWCD has been successful in working with the community within the North River TMDL area as a result of continued mailings, educational programs, and public update meetings regarding the participation in the Project, water quality improvements, and future plans for implementation. To date, 114 cost-share contracts have been written, 256 educational/outreach activities have been attended and 452 farms visits have been made. BMP implementation activities for 2005 are summarized below and in Table 10.

#### Residential BMPs

- 12 septic tank pump-outs completed and 2 contracted (RB-1)
- 3 septic systems repaired and 1 contracted for repair (RB-3)
- 1 septic tank system replaced (RB-4)
- 1 alternative septic system installed (RB-5)

#### Agricultural BMPs

- 2,443 acres of land contracted for cover crops (SL-8B)
- 2906 ft of stream fenced (SL-6), 120 head of cattle excluded from streams
- 4 loafing lot management systems installed (WP-4B) for a total of 455 head of cattle and 800 ft of exclusion fencing
- 316 acres enrolled in the sidedress nitrogen on corn practice (NM-3)

Volunteer installment of BMPs without government assistance is critical in the overall success of TMDL implementation in the Muddy Creek watershed of the North River project. This area is heavily influence by the large Mennonite population. As a result of the high level of voluntary participation, a field survey of voluntary practices was begun in 2005 to determine that all practices in the watershed were being accounted and credited towards the IP project.

These practices included:

- 5000 ft of stream protected (WP-2) and 140 head of cattle excluded from Muddy Creek in 2003, 4000 ft of stream protected

(WP-2) and 70 head of cattle excluded from Muddy Creek in 2005

- Two hardened stream crossings installed in 2003 (WP-2B)
- One 7560 ft<sup>2</sup> loafing lot management system installed for 95 head of cattle in 2003 (WP-4B)
- 3200 ft<sup>2</sup> animal waste control facility constructed in 2003 (WP-4)
- 35 x 1200 ft grass filter strip installed in 2003 (WQ-1)

**Blackwater River** - DCR, in conjunction with the Blue Ridge Soil and Water Conservation District (BRSWCD) in Franklin County, Virginia, continued a 5-year TMDL implementation project to reduce fecal coliform and address benthic impairments in four impaired stream segments in the Blackwater River watershed through implementation of agricultural and residential BMPs in accordance with a previously published and approved TMDL IP.

The project area focuses on a portion of the Blackwater River Watershed (HUC 0301010), located in Franklin County, Virginia and approximately 15 miles south of Roanoke. The Blackwater River drains into Smith Mountain Lake, a reservoir of the Roanoke River. The Roanoke River flows southeast through two additional

the Abermarle Sound. This project will complete its 5th year at the end of 2006

TMDL staff at the Blue Ridge SWCD has been successful in working with the community within the Blackwater River TMDL area as a result of continued mailings, educational programs, and public update meetings. To date, the project has produced approximately 6.5 miles of stream exclusion fencing, exclusion of more than 1600 animals from the Blackwater River and the repair or replacement of 20 malfunctioning septic systems or straight pipes. Table 11 summarizes the BMP implementation.

In 2005 BRSWCD staff:

- assisted in the completion of a woodland buffer filter area practice. The practice was completed with the help of Boy Scout Troop #129,
- produced a newsletter detailing the agricultural and residential TMDL programs. This was mailed to 2,000 households,
- Published an article on riparian buffers in the Franklin News-Post.

**Middle Fork Holston River (Three Creeks)** - DCR, in conjunction with the Holston River Soil and Water Conservation District (HRSWCD) in

**Table 11 - BMP Summary for the Blackwater River Watershed**

Control Measure	Units	Estimated Units Needed	Units 2005 Total	Units – Project Total
<u><b>Agriculture Program</b></u>				
Stream Exclusion Fencing	Feet	369,480	1,800	36,361
Loafing Lot Management			4	4
Vegetative Cover on Critical Areas	Acres		0	4.7
Forested Riparian Buffer	Acres		1.4	29.2
Streambank Stabilization	Acres		320	320
<u><b>Residential Program</b></u>				
Septic System Pump Out	System			
Septic System Repair	System			3
Septic System Installation	System	7	2	16
Alternative Waste Treatment System	System	8	1	1
<b>Total On-Site System Installation</b>	<b>System</b>	<b>15</b>	<b>3</b>	<b>20</b>

reservoirs, eventually emptying into Washington County, Virginia,



continued a 5-year TMDL implementation project to reduce fecal coliform levels and address benthic impairments in four impaired stream segments that drain to the Middle Fork of the Holston River through implementation of agricultural and residential BMPs in accordance with a previously published and approved TMDL implementation plan.

The project area (also known as Three Creeks) contains four watersheds – Cedar Creek, Hall Creek, Byers Creek, and Hutton Creek, which are tributaries of the Middle Fork Holston River. The Middle Fork Holston River is located in Smyth and Washington Counties of Virginia. Its headwaters are located in the western part of Wythe County near the town of Rural Retreat.

TMDL staff at the Holston River SWCD has been successful in working with the community within the Holston River TMDL area as a result of continued mailings, educational programs, and public update meetings regarding the participation in the TMDL project, water quality improvements, and future plans for implementation. Since the fall of

administered both the agricultural and residential programs for the Three Creeks TMDL Implementation Project. To date the project has produced more than 20 miles of stream exclusion fencing, exclusion of 2,500 animals from streams, 182 septic tank pump-outs and the repair or replacement of 22 malfunctioning septic systems or straight pipes. This project will complete its fifth year at the end of 2006. At the end of that time there will be a full analysis of the progress of implementation. Progress has been made in the first 4 years of the project. A summary of all BMP implementation activities is listed in Table 12.

The *Three Creeks TMDL Implementation Project* was chosen in 2005 to represent Virginia as a success story to be highlighted through the EPA Mid-Atlantic Nonpoint Source Pollution Initiative. A story entitled, "Success of Public Participation" was prepared and is highlighted on the EPA headquarters and EPA Region III websites. At the end of 2004, three years into the project, approximately 70 percent of the agricultural producers in the watershed have been contacted about

This awareness along with BMP implementation has resulted in some improvements. Water quality results as of 2004 indicated documented water quality improvement. Bacteria monitoring by the DEQ indicates that violation rates of the fecal coliform instantaneous standard in the project area have declined considerably since the implementation project was initiated.

Since the beginning of implementation efforts in 2001, fecal coliform readings have decreased in the Byers, Cedar, and Hutton Creek watersheds. Bacteria water quality violations of the 1,000 cfu/100 mL instantaneous standard for fecal coliform bacteria were reduced by an average of 50 percent during the period 2000 to 2004 in Hutton Creek. Ongoing monitoring will be necessary to verify a sustained decrease in fecal coliform concentrations and general overall improvement in water quality.

### Water Quality Improvements and Recommendations for Future Actions

The TMDL program and its partners work to achieve water quality standards by reducing pollution through installing the BMPs that are established in the implementation plan. BMPs are effective and practical ways to prevent or reduce pollution from nonpoint sources to ensure water quality. They can range from repairing and/or installing septic systems, stream fencing, and planting riparian buffers. Dozens of voluntary and government funded BMPs are also used throughout the watersheds. In 2005, the six active TMDL implementation projects all achieved various levels of success in implementing BMPs, on-the-ground activities, and progress towards full implementation of their IPs to achieve the ultimate goal of delisting. Together these projects were able to achieve the following pollution reductions summarized in Table 13:

**Table 121 - BMP Summary for the Middle Fork Holston River Watershed (Three Creeks Watershed)**

Control Measure	Units	Estimated Units Needed <sup>1</sup>	Units 2005 Total	Units – Project Total
<u><b>Agriculture Program</b></u>				
Stream Exclusion Fencing	Feet	205,920	2,300	77,091
Vegetative Cover on Critical Areas	Acres		0.5	1
Forested Riparian Buffer	Acres		1.8	61.9
Vegetative Cover on Cropland			83.5	83.5
<u><b>Residential Program</b></u>				
Septic System Pump Out	System		48	168
Septic System Repair	System	67	5	14
Sewer Connections	System	8	0	2
Septic System Installation	System	67	1	5
Alternative Waste Treatment System	System	67	0	1
<b>Total On-Site System Installation</b>	<b>System</b>	<b>209</b>	<b>6</b>	<b>22</b>

<sup>1</sup> Numbers for septic system installation, repair, connection to public sewer and alternative waste treatment systems are projected measures to correct 209 straight pipes and failing septic systems.

2001, the Holston River SWCD has the goals of the implementation plan.



**Table 13: Virginia TMDL Implementation Pollutant Load Reductions: January 1 - December 31, 2005**

TMDL Implementation Project	Fecal Coliform (cfu/100ml)	Sediment (tons)	Phosphorus (lbs)	Nitrogen (lbs)
Middle Fork Holston River	3.99E+14	64.2	198.1	799.6
Blackwater River	1.45E+15	291	262.1	1620.4
North River	1.02E+15	192.1	307.5	1686.1
Catoctin Creek	3.15E+13	27.7	43.2	225.9
Holmans Creek	4.73E+10	110	181.9	924.5
Willis River	4.85E+14	0.14	0.6	3.4
<b>2005 TOTAL REDUCTIONS</b>	<b>3.39E+15</b>	<b>685.14</b>	<b>993.4</b>	<b>5259.9</b>

The estimated total cost to develop TMDLs through 2010 is about \$10.7 million. DEQ projects that, assuming level funding sources and accurate estimates, the agencies will be able to meet the consent order schedule and complete the development of the TMDLs required by 2010. There do exist, however, several unknown factors that could pose difficulties in meeting the TMDL schedule. These factors include: the quantity of non-consent order waters or impairments that DEQ adds to the TMDL schedule, implementation plan development costs, unforeseen complexities and modeling costs for more complex TMDLs. Challenges also exist in the development of TMDLs for complex pollutants such as mercury, and in the updating of a growing number of TMDLs with the potential for future TMDL modifications to accommodate permit needs.

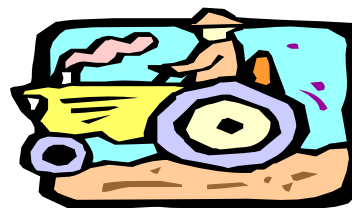
A growing challenge for the program is the transition from developing TMDLs to actual water quality improvements. Because there are no new authorities for enforcing TMDLs, it has been Virginia's expectation to implement TMDLs using existing programs and funding sources. Existing resources include permits from DEQ and DMME that limit discharges to state waters. These programs are utilized when stream impairments are attributed to a permitted facility.

For non-permitted activities, Virginia's approach has been to use incentive-based programs such as the Virginia Agricultural Cost Share Program and the State Revolving Loan Fund. Virginia also offers grant funding for the implementation of best management practices and technical assistance in watersheds with approved implementation plans.

As a result of the Governor's Natural Resources Partnership Agenda, DEQ, DCR, VDACS and VDH began discussions and development of Strategies to identify and replace straight pipes on impaired streams and to utilize the Agricultural Stewardship Act to correct pollution sources on impaired streams. These efforts are being coordinated with the state's Watershed Permitting and Planning Task Force but an overall strategy has not been adopted and there was no activity regarding this action in 2005.

Despite the challenges, Virginia's TMDL program has shown that properly applied and maintained best management practices result in measurable improvements in water quality.

It will be the goal of Virginia's natural resource agencies to work with the general public to take this success to the next level by successfully remediating some impaired streams within the next few years.



## AGRICULTURE

Agriculture is a large and diverse industry in Virginia and accounts for approximately 25 percent of Virginia's land area. Agricultural activities continue to be the most significant source of nonpoint source pollution (NPS) in the state. The 2006 Water Quality Assessment suggests that about 75% of the total NPS nitrogen load, 70% of the total NPS phosphorous load, and 67% of the total NPS sediment load comes from agricultural land. These pollutants can escape crop field and livestock production areas and enter surface and groundwater systems.

DCR coordinates the various statewide agricultural nonpoint source pollution management programs. The programs focus on several areas: the Virginia Agricultural BMP Cost-Share Program, the Virginia BMP Agricultural Tax Credit Program, Conservation Reserve Enhancement Program (CREP) and other related programs.

Best management practices (BMPs) installed through the above programs are designed to reduce NPS pollution, which adversely impacts state waters. Soil loss (i.e. sediment) and excess nutrients (i.e., nitrogen and phosphorus) are reduced by a variety of BMPs installed on both cropland and pastureland. All 33 practices eligible for cost-share, and 49 practices eligible for tax credits provide some amount of reduction of agricultural NPS contaminants, and assist the local Districts' mission of improving water quality. This report highlights some state and federal program accomplishments.



### **Agricultural BMP Cost-Share and Tax Credit**

Virginia's Agricultural Best Management Practice Cost-Share Program provides financial assistance as an incentive for the voluntary installation of best management practices to improve water quality. Agricultural BMPs are significant components of all the Chesapeake Bay Tributary Strategies and many Total Maximum Daily Load (TMDL) requirements for impaired streams. DCR relies on Soil & Water Conservation Districts (SWCDs) to implement this program. The Virginia Agricultural BMP Cost-Share Program started in 1984 as a demonstration program that focused on educating farmers about the benefits, both financial and environmental, that various soil and water conservation practices provide. With increased funding levels, DCR is focusing on widespread and targeted

implementation of more cost-effective BMPs.

These programs provide financial incentives statewide to agricultural landowners and operators for the implementation of approved BMPs which improve water quality. Crop, pasture, animal feeding, horticultural and forest operations throughout Virginia participate. BMPs are voluntarily implemented based upon Farm Conservation Planning developed cooperatively by the operator and local soil and water conservation technicians that address site-specific nonpoint sources. Depending upon the BMP implemented, the participant may receive as much as 82.5% of approved expenditures reimbursed by either cost-share funds or state tax credits.

The nutrient and sediment reductions listed below have been achieved since 1992. These reductions correlate directly with all elements of the Cost-Share Program, including the amount of funding, participating farmers, acres under program management, and number of BMPs installed.

- 14,548,930 pounds of nitrogen,

- 2,591,581 pounds of phosphorus, and
- 2,637,431 tons of soil.

Available funding for the Virginia Agricultural BMP Cost-Share Program has been variable in recent years. During fiscal year 2005 (July 1, 2004 through June 30, 2005) financial support of the Agricultural BMP Cost-Share Program increased from a near all-time low during the previous two-year funding cycle. FY05 saw over \$7.9 million in cost-share, which broken down, was approximately \$3.8 million in state, \$1.8 million in other cost-share, and \$2.3 million in farmer contribution.

A summary of the agricultural BMP implementation activities for July 1, 2004 through June 30, 2005 is provided in Table 14 on the next page.

### **FY2005 Ag-BMP Cost-Share**

- 867 participating farmers,
- 90,058 acres under program management, and
- 2,691 installed BMPs.
- 43,038 tons of waste were treated
- 1,015,230 Lbs of nitrogen reduced
- 218,746 pounds of phosphorus reduced
- 186,623 tons of sediment reduced

**Table 14 : Animal & Crop Practices by Basin (Summarized as of 9/15/2005)**  
Reporting Period July 1, 2004 - June 30, 2005 (NOTE: Contains all activities, including 319-funded)

	No.	No.	Acres	Tons SL	Lbs N	Lbs P	Tons Waste
BASIN	Farmers	Practices	Benefited	Reduced	Reduced	Reduced	Treated
POTOMAC	60	123	5,723.85	9,433.92	51,320.53	8,408.62	
SHENANDOAH	107	182	7,572.70	13,403.91	72,917.26	16,603.86	30,744.90
RAPPAHANNOCK	70	202	7,732.60	7,447.67	40,515.29	7,681.10	
YORK	26	101	2,781.50	4,057.15	22,070.91	4,123.50	120.00
JAMES	95	450	11,299.93	8,799.12	47,867.20	9,238.91	
BAY COASTAL	42	223	8,217.39	43,720.67	237,840.41	59,180.85	453.75
OCEAN COASTAL	13	81	3,491.40	18,918.35	102,915.84	25,908.22	
ALBEMARLE SOUND	6	13	561.30	740.30	4,027.22	744.84	
CHOWAN	90	732	31,830.11	7,454.02	40,549.88	10,915.35	1,300.00
ROANOKE	102	169	3,676.68	17,958.56	97,694.54	19,953.75	4,100.00
YADKIN	4	4	31.00	89.00	484.16	89.00	
NEW	69	146	2,763.70	31,829.00	173,149.74	31,366.89	1,750.00
CLINCH/POWELL	31	35	1,399.30	5,495.88	29,897.62	5,623.85	
HOLSTON	133	211	2,952.40	17,219.22	93,672.56	18,851.56	4,570.00
BIG SANDY	19	19	25.00	56.50	307.36	56.50	
Total	867	2,691	90,058.86	186,623.27	1,015,230.52	218,746.80	43,038.65



### **Conservation Reserve Enhancement Program**

The Virginia Conservation Reserve Enhancement Program (CREP) aims to improve water quality and wildlife habitat by offering financial incentives, cost-share and rental payments to farmers who voluntarily restore riparian buffers, filter strips and wetlands through the installation of

approved conservation practices. CREP is an enhancement to the federal Conservation Reserve Program (CRP), a U.S. Department of Agriculture Farm Services Agency program, which was established in 1985. CRP was established to provide a cost-effective means to address priority agricultural resource problems by targeting federal and state resources to specific geographic regions of particular environmental sensitivity. Applications are being accepted until December 31, 2007.

The Virginia CREP Program is divided into two regions. The Chesapeake Bay CREP targets Virginia's entire Chesapeake Bay watershed (approximately 60% of the Commonwealth) and calls for the installation of 22,000 acres of riparian buffer and filter strips as well as 3,000 acres of wetland restoration. The

Southern Rivers CREP targets watersheds outside the Chesapeake Bay drainage basin and aims to establish 12,500 acres of riparian buffer and filter strip plantings and 2,500 acres of wetland restoration. In addition, statewide there is a goal of having 9,000 acres in permanent CREP easements. Statewide, these programs are expected to reduce annual nitrogen loads to waterways by more than 710,000 pounds, phosphorus by more than 114,000 pounds and sediment by more than 62,000 tons. The anticipated reductions will help Virginia meet water quality improvement goals, particularly in the Potomac-Shenandoah region, wherein the state has agreed to reduce nutrient loads by 40 percent.

FY2005 and FY2006 WQIF funding for the CREP program was provided

for the Southern Rivers watershed to add an additional 5000 acres to its original goal of 10,000. To accelerate CREP enrollment in the Chesapeake Bay watershed, additional funding from WQIF is being offered to landowners for a CREP bonus of \$100 / acre for 100 foot wide buffers. This program will enhance opportunities for securing permanent riparian buffer easements. This initiative will achieve roughly 50% (7,000 acres) with 100-foot buffers. A wetlands bonus payment of \$ 200 per acre is also being offered to Virginia landowners for approximately 4,000 acres in the Chesapeake Bay watershed.

A summary of CREP cost-share assistance to farmers for the period of July 1, 2004 through June 30, 2005 is in Table 15.

**FY2005 CREP Summary:**

- 284 participating farmers
- 3,135 acres of buffers and wetland restored
- 339 miles of stream bank protected
- 5,220 Tons of sediment reduced
- 28,397 pounds of Nitrogen reduced
- 5,896 pounds of Phosphorous reduced.

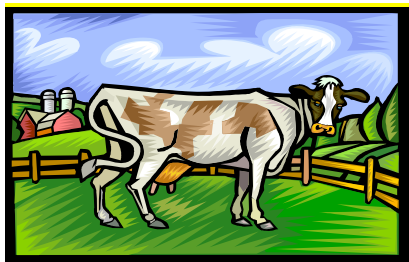
Accomplishments by the CREP program are impressive. Since the June 2000 the following accomplishments have been made:

**CREP Program Summary:**

- 1,441 participating farmers
- 6,388 acres of buffers and wetland restored
- 1,328 miles of stream bank protected
- 48,613 tons of sediment reduced
- 264,549 pounds of nitrogen reduced
- 48,375 pounds of phosphorous reduced.

Table 15: Virginia CREP Tracking Summary (Summarized as of 10/4/2005) Reporting Period July 1, 2004 - June 30, 2005							
Basin	No. Farmers	No. Practices	Acres of Buffer Restored	Miles of Stream Buffered	Tons SL Reduced	Lbs N Reduced	Lbs P Reduced
<b>CHESAPEAKE BAY DRAINAGE AREA</b>							
BAY COASTAL	1	3	1.50	0.21	16.00	87.04	16.00
JAMES	33	99	258.60	21.95	304.61	1,657.07	293.20
OCEAN COASTAL							
POTOMAC	8	21	69.50	4.73	181.22	985.83	143.89
RAPPAHANNOCK	15	35	299.50	31.43	257.69	1,401.84	214.64
SHENANDOAH	39	93	332.40	20.38	981.30	5,338.27	982.66
YORK	7	16	53.40	6.65	72.64	395.17	61.18
Ches. Bay Total	103	267	1,014.90	85.35	1,813.46	9,865.22	1,711.57
<b>SOUTHERN RIVERS DRAINAGE AREAS</b>							
ALBEMARLE SOUND	9	20	409.20	63.75	43.86	238.60	54.48
BIG SANDY							
CHOWAN	74	250	1,288.70	143.43	1,006.41	5,474.74	1,476.45
CLINCH/POWELL	27	84	93.80	10.80	452.90	2,463.80	475.82
HOLSTON	40	109	98.00	15.18	485.94	2,643.54	526.53
NEW	20	69	95.30	8.89	297.16	1,616.56	285.30
ROANOKE	10	36	127.20	11.21	1,065.10	5,794.14	1,310.55
YADKIN	1	3	7.90	0.97	55.30	300.83	55.30
S. Rivers Total	181	571	2,120.10	254.23	3,406.67	18,532.21	4,184.43
Statewide Total	284	838	3,135.00	339.58	5,220.13	28,397.43	5,896.00





## **Nutrient Management**

Proper management of nutrients used in agriculture is critical to Virginia's efforts to reduce nonpoint source pollution of both surface and groundwater. DCR's Nutrient Management Program was established in 1989. The program's purpose is to encourage proper land application and efficient use of fertilizers, manures, sewage sludge and other nutrient sources utilized for agricultural and urban landscape purposes, in ways that protect and improve the quality of Virginia's ground and surface waters. DCR works closely with large and small agricultural operations to manage agricultural nutrients. Education of urban landowners about the impacts of nutrient runoff from lawns, gardens, golf courses, parking lots, and other landscaped areas is also a focus of the Nutrient Management Program.

Virginia is a leader in implementing urban nutrient management Strategies in cooperation with private industry to reduce nutrient runoff from lawns, office parks, golf courses and other developed lands. DCR runs the Water Quality Improvement Agreement Program for urban lawn care retailers, lawn care companies and others who wish to be recognized for offering environmentally responsible products and services. Businesses that have signed such agreements offer their customers information about lawn care or the application of nutrients within established criteria that minimize nutrient loss by controlling application rates and timing. Voluntary participation in the program leads to

reduced nutrient loss to Virginia's ground and surface waters, including the Chesapeake Bay and its tributaries.

### **Nutrient Management Regulatory Revisions**

During 2005, final revisions to DCR's nutrient management regulations were developed along with supporting documents. The final regulations were published on December 12, 2005 in the Virginia Register of Regulations. The final regulations include provisions to improve the application timing of nitrogen containing nutrient sources, more substantial phosphorus application criteria, and a number of other technical changes. The Virginia Nutrient Management Standards & Criteria that is promulgated by reference has been updated as well with additional of new soils, crops and recommendations, and many other revisions to existing criteria. A new section was included that addresses nutrient applications to forest plantations.

The turfgrass section was greatly expanded to include detailed management practices for golf courses, athletic fields, and sod farms in addition to criteria for home lawns, office parks, and public lands that were included in the previous edition. The Virginia Nutrient Management Standards & Criteria document was expanded from 64 to 177 pages.

The revision of the Nutrient Management Training and Certification regulations to reflect technology available to date is a identified strategy in the *Virginia Nonpoint Source Pollution Management Program* plan document. DCR staff worked with a broad based technical advisory committee in crafting the regulations. Committee members represented various sectors of agriculture, the environmental community, academia, and related agencies.

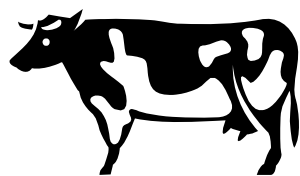
### **Nutrient Management Plans on State Owned Land**

A new state law became effective July 1, 2005 that requires all state owned lands that receive nutrient applications to have an NMP. During this reporting period, guidance documents were developed to implement the requirement and a plan format was developed for non-agricultural NMPs required by the new law. Initial information packages were mailed to 67 state agencies. To date, over 234,000 acres of state owned land have been identified, of which 7,832 acres receive nutrient applications. Informational meetings with contact persons from all impacted agencies are planned for the next reporting period.

### **Phosphorus Site Index for Nutrient Management Plans**

A revised version of the phosphorus site index (P-Index) referenced in *The Virginia Nonpoint Source Pollution Management Plan* was completed in 2005. The P-Index contains screening criteria based on soil test phosphorus levels to determine if it is appropriate to calculate the index. Soils with less than 20% phosphorus saturation as compared to aluminum and iron content may receive manure and biosolids based on nitrogen content. Conversely, soils with greater than 65% saturation are too environmentally risky to receive future applications of phosphorus regardless of the outcome of the P-Index calculations. For sites where the soil test is between 20% and 65% saturation, the P-Index rating should be determined to control future phosphorus applications. During 2005, the P-Index and associated decision rules were programmed into a Beta test version of the DCR NutMan computer software package used for NMP development. Version 2.0 of the P-Index and its associated user guide is posted on the Virginia Tech website at: <http://p-index.agecon.vt.edu/>.





### DCR Funds Innovative Incentive Program to Reduce Dairy Phosphorus in Feeds

DCR committed \$400,000 of state Water Quality Improvement Act funds to an innovative incentive program to provide incentives to Virginia dairy farmers if they feed phosphorus at or below specified levels. The incentives of \$6 to \$12 per cow will be provided annually after verification of feeding practices through six feed analyses each year. Reduction of phosphorus in feed rations will directly reduce excess phosphorus excretion in manures. This pollution source reduction will be able to be documented and credited. The periodic feed analysis will be provided to participating farmers at no charge through the project. The program is expected to enroll more than 300 farmers. The project should provide useful aggregate data concerning the nutrient reduction potential of this innovative practice. It is designed to encourage farmers to solicit the help of their feed nutritionists, feed suppliers, and veterinarians in achieving lower target levels of phosphorus in feeds. In the past, these advisors have sometimes been hesitant to advise farmers to reduce phosphorus to university recommended levels.



### Nutrient Management Field Specialists

DCR's nutrient management specialists provide technical assistance to landowners. These specialists develop site-specific nutrient management plans (NMPs) with cooperating farmers, assist

farmers with manure testing for nutrient levels, calibrate nutrient application equipment, and coordinate soil nitrate testing in agricultural fields. DCR's nutrient management specialists also assist localities in developing nutrient management programs and ordinances. The specialists developed NMPs covering 107,842 acres during 2005. This exceeds the projection of 60,000 acres annually as contained in the *Virginia Nonpoint Source Pollution Management Program* plan document. The field staff also performed 245 site reviews for state biosolids use permits, assisted farmers in obtaining 405 manure samples for analysis to help achieve the proper nutrient application rate on 67,372 acres of manure application land, obtained 1,278 soil samples, and analyzed 411 soil nitrate samples on 9,099 acres. The specialists made 1,944 field visits to farmers to gather information to write NMPs or to recommend changes to NMPs. Field staff presented nutrient management information at 15 farmer meetings with a total attendance of 912, and 12 field days with a total attendance of 2,980



### Nutrient Management Certification Program

DCR certifies private and public sector nutrient management planners, and conducts training sessions and examinations, as authorized in §10.1-104.2 of the *Code of Virginia*. As of December 2005, 286 people are certified to develop nutrient management plans (NMPs) in Virginia. DCR conducts training sessions and examinations every six months. The staff also works with DCR's Chesapeake Bay Local Assistance staff and SWCDs to help facilitate preparation of Bay Preservation Act plans.

**Table 16 - Nutrient Management Certificates issued through 2005**

Categories	No. indiv.
Fertilizer/Pesticide Industry	57
Private Consultants	42
DCR Employees	22
SWCD Employees	26
DEQ Employees	25
NRCS Employees	64
Extension Agents	11
Biosolids Industry	14
Academia	3
Misc. Individuals	22
<b>Total Certified Persons</b>	<b>286</b>

These plans address soil erosion, nutrient management and integrated pest management of farms within Bay Preservation Areas as defined by the Chesapeake Bay Preservation Area Designation and Management Regulations. In 2005, a total of 99,723 acres of NMPs were developed by There are planners from fertilizer, seed, and pesticide suppliers, private consultants, employees of SWCDs, DCR, DEQ, NRCS, and other categories (Table 16).



### Natural Resources Conservation Service

Most of the Natural Resources Conservation Service's (NRCS) NPS pollution reduction efforts were concentrated in the three major program areas: Farm Bill Programs, Conservation Operations and the Land Treatment Program under the PL-534 and PL-566 legislation. Funding for the Farm Bill programs totaled approximately \$19 million dollars for cost-share programs, easements, and incentive based

payments. Of this total, slightly over \$13 million was obligated to contracts under the Environmental Quality Incentive Program (EQIP). Major efforts under these resource concerns are summarized in Table 17.

**(a) Environmental Quality Incentive Program (EQIP)** - The largest program, the Environmental Quality Incentive Program (EQIP), directed approximately \$13 million to 600 cost share contracts with producers to address resource problems under any of the statewide water quality degradation priorities: erosion from cropland and grazing land management, nutrient pollution from cropland and pastureland, improper animal waste management systems, and NPS pollution from forestry operations.

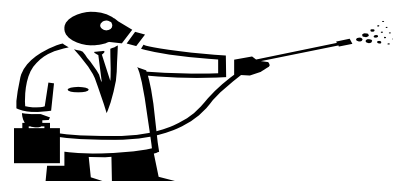
**(b) Farm and Ranchland Protection Program and Grassland Reserve Program** - NRCS also administered several easement programs that will retain agricultural land in its current

less intensive use. Approximately 15 easements were approved under The Farm and Ranchland Protection Program, Grassland Reserve Program, and Wetland Reserve Program to bring long-term protection to these areas.

**(c) Conservation Reserve Program (CRP) and Conservation Reserve Enhancement Program (CREP)** - NRCS provides additional technical assistance to support the CRP and CREP programs. Accomplishments are reported by the Farm Service Agency and DCR. In addition, NRCS did install an additional 1,533 acres of riparian forest buffers, 235,081 feet of field borders, and 118,792 feet of stream bank protection work under various programs. NRCS provides most of the traditional technical assistance in the form of conservation planning to producers, SWCDs and other agencies and groups through this effort. In addition, Comprehensive Nutrient Management Plans, which include complete

planning involving erosion control, nutrient management planning and animal waste management, were prepared for 103 animal operations covering 5,327 acres. A total of 5,099 acres were certified as completely installed.

**(d) Conservation Security Program (CSP)** - The newest NRCS program, Conservation Security Program (CSP) was implemented for the first time in Virginia in 2005. Three sub watersheds in the Chesapeake Bay drainage area, the South Fork Shenandoah River, the Mattaponi River, and the tidal Rappahannock River were all selected for participation. Approximately 210 applications were received and 66 applications were funded in this incentive based program to reward existing conservation efforts provided long-term maintenance, and provide for enhanced resource protection for certain conservation practices.



### Pesticide & Container Disposal Programs

The Virginia Department of Agriculture and Consumer Services (VDACS) administers the Pesticide Disposal and Plastic Pesticide Container Recycling Programs. These programs promote environmental stewardship and are designed to assist agricultural producers, pesticide dealers and pesticide control firms with viable and alternative options to traditional disposal. Collectively, these programs reduce the potential for adverse effects from improper disposal of pesticides and pesticide containers to both surface and groundwater.

#### **Pesticide Disposal Program**

Virginia's Pesticide Disposal Program is a cooperative effort among the

**Table 17: Major Outcomes to 2005 NRCS Programs**

Individual Practices:	Units	Planned	Installed
Animal Mortality Facility	Facility	11	2
Compost Facility	Facility	7	5
Conservation Cover	Acres	9,225	1,748
Conservation Crop Rotation	Acres	52,448	48,628
Cover Crop	Acres	30,997	23,193
Critical Area Planting	Acres	288	60
Fencing	Feet	3,106,072	1,370,026
Field Border	Acres	409,430	235,081
Filter Strip	Acres	612	540
Nutrient Management Planning	Acres	97,111	54,930
Pest Management	Acres	81,406	41,562
Pipeline	Feet	1,189,136	551,888
Prescribed Grazing	Acres	76,199	46,003
Residue Management (no-till)	Acres	46,358	42,473
Residue Management (all others)	Acres	32,454	29,978
Riparian Forest Buffer	Acres	2,471	1,533
Streambank Protection	Feet	100,354	118,792
Terrace	Feet	86,825	71,211
Tree Planting	Acres	4,838	3,668
Waste Storage Facilities	Facility	263	29
Watering Facility	Facility	1,787	939

VDACS and the Virginia Pesticide Control Board (VCB), with participation from VCE and the Division of Consolidated Laboratory Services. The disposal of canceled, banned or unwanted agricultural and commercial pesticides poses a significant challenge to agricultural producers and other pesticide users due to its high cost. The proper disposal of waste pesticides eliminates a potential threat to health and the environment. The program assists agricultural producers, pesticide dealers and pest control firms with the proper disposal of unwanted agricultural and commercial pesticides and is available at no cost to participants. The program is funded through pesticide fees collected by VDACS' Office of Pesticide Services.

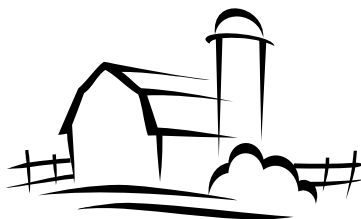
The 2005 Pesticide Disposal Program concluded in late August 2005. A total of 87,526 pounds of canceled, banned or unwanted agricultural and commercial pesticides were collected and subsequently destroyed. Since its inception, Virginia's Pesticide Disposal Program has collected and destroyed a total of 1,245,851 pounds of pesticides. The 2006 Pesticide Disposal Program will be conducted in Northwest Virginia.

[www.vdacs.virginia.gov/pesticides/disposal.html](http://www.vdacs.virginia.gov/pesticides/disposal.html)

#### **Plastic Pesticide Container Recycling**

Virginia's Plastic Pesticide Container Recycling is an environmentally responsible alternative for the disposal of properly rinsed plastic pesticide containers. Granulated chips are transported to recycling facilities and fabricated into items such as pallets, fence posts, field drain tiles and parking stops thus keeping them out of landfills. The program is a cooperative effort among VDACS, the Virginia Pesticide Control Board, VCE and local governments. To participate in the program, a locality must make application to VDACS and agree to collect, inspect and store the properly rinsed containers until granulation.

VDACS provides \$1,875 in reimbursement costs to participating localities to offset the cost of the program. In 2005, a total of 57,008 pesticide containers were collected from 16 localities and 12 pesticide dealer locations throughout Virginia. Since the inception of this program 745,000 containers have been recycled, which has effectively removed a significant volume of waste plastic from the Virginia ecology. Program information may be found at: [www.vdacs.virginia.gov/pesticides/recycling.html](http://www.vdacs.virginia.gov/pesticides/recycling.html)



#### **Agricultural Stewardship**

The Agricultural Stewardship Act (ASA) is the result of a joint effort by the agricultural and environmental communities, districts and agencies, to develop a common-sense solution to water pollution problems caused by agricultural operations. The Commissioner of the VDACS is responsible for the administration and enforcement of the ASA. The goal of the Act is to consider the needs of the farmer while meeting environmental laws. The ASA addresses water pollution problems caused by nutrients, sediments and toxins entering state waters from agricultural activities. ASA also allows a complaint and investigation procedure that forces compliance by agricultural operators when activities are determined to cause water pollution.

The program is designed to:

- Identify water quality problems and to help farmers correct them in a common-sense manner that accommodates both the farmer and the environment;

- Establish a system that respects both the farmer and the person voicing concern about water quality;
- Educate farmers about stewardship and encourage them to enhance it even in instances in which a water quality problem cannot be proven in a legal sense;
- Support farmers in their efforts to strengthen their stewardship practices, provide them with the information they need, and to help link them to resources that can provide assistance;
- Educate the average citizen about farming practices that are not harmful to water quality regardless of their appearance, and
- Provide SWCD with training and the Agriculture Stewardship Act materials they need, to the extent that resources will allow.

Complaints that an agricultural activity is producing water pollution go to the Commissioner of VDACS to determine if an investigation is warranted. The investigation determines whether the agricultural activity is causing or will cause water pollution. If no causal link is found, the Commissioner will dismiss the complaint. If the investigation determines that the activity is the cause, the farmer is given sixty days to develop a corrective plan. ASA provides a farmer six months to start implementing his plan and up to eighteen months for full implementation. If a farmer fails to implement a plan within 18 months, ASA requires the Commissioner to take enforcement action.

The Agricultural Stewardship Program, during the period of April 1, 2004 through March 31, 2005, the Commissioner received more than 100 inquiries regarding possible agricultural pollution, of which 33 became official complaints. Twelve of the complaints involved both sediments and nutrients. Five complaints attributed the pollution



problems solely to nutrients, while 16 faulted only sediments. Official complaints fell into seven different categories, their breakdowns are:

1. beef – 7 (21%)
2. cropland – 13 (40%)
3. dairy – 2 (6%)
4. horses – 6 (18%)
5. hogs – 3 (9%)
6. beef & hogs received – 1 (3%),
7. beef & horses – 1 (3%)

The Commissioner's Office completed the investigation of 28 of the 33 official complaints received. Of those 28 complaints, investigations determined that 18 of those complaints revealed insufficient or no evidence of water pollution and were, therefore, unfounded. In some of these cases, no clear connection could be made between the alleged pollution problem and the body of water in question. In other cases, the alleged problem had been corrected by the time the investigation was conducted. In some instances, the farmers involved in unfounded complaints voluntarily incorporated best management practices into their operations to prevent more complaints or to prevent potential problems from developing into founded complaints. One complaint was dismissed. The disposition of the 14 remaining complaints is as follows:

- Nine complaints were founded
- Three complaints are awaiting the Commissioner's decision
- Two complaints are awaiting investigation

In each founded case, there was sufficient evidence to support the allegations that the agricultural activities were causing or would cause pollution. As a result of three Informal Fact Finding Conferences, the agency issued Corrective Orders on cases involving operations in Rockingham, Augusta, and Northumberland counties. Two of those corrective orders were issued for failure to maintain agricultural stewardship measures, and the third for failure to

complete the implementation of the Agricultural Stewardship Plan. An Informal Fact Finding Conference was held in Washington County, to determine if a corrective order needs to be issued.

To ensure that the level of knowledge and service remains high, the staff of the Agricultural Stewardship Program provides opportunities for education and instruction for the many partners involved in this on-going conservation effort. The ASA staff works with the Soil and Water Conversation District Employees' Association to include a session at its summer training.



## **FORESTRY**

Virginia has approximately 16 million acres of forested land (68 per cent of the state). The primary pollutant associated with forestry operation is sediment resulting from soil loss during forest disturbing activities.

In 1992 the Water Quality Task Force recommended that the Virginia General Assembly pass the Silvicultural Water Quality Act of 1993 (Article 12, §10.1-1181.1-7). This authorized the Department of Forestry (DOF) to act to prevent pollution of state waters from silvicultural activities. The act was amended several times, the last being in 2002 to allow for the issuance of a civil penalty against the operator for failure to notify DOF of a commercial timber harvesting operation.

Through the Nonpoint Source Pollution Management Program (NPSPMP) and the Virginia Silvicultural Water Quality Law

(SWQL), the Commonwealth aims at reducing nutrient and sediment pollution entering Virginia's waters. DOF is actively involved in both water quality protection and the prevention of nonpoint source pollution from forestry practices through the SWQL and through statewide riparian forest buffer restoration work.

## ***Silvicultural Water Quality Law***

Since 1993, the efforts of the DOF and public/private organizations have trained over 4,500 loggers in Water Quality Techniques known as Best Management Practices or BMPs, inspected over 3,000 harvesting operations per year, and utilized the Silvicultural Water Quality Act (SWQA) to protect water quality.

Education under the American Forest and Paper Association's Sustainable Forestry Initiative program has allowed the DOF to train over 5,042 individual loggers and foresters on harvest planning and BMPs since 1996. Field personnel within each of the six administrative regions accomplish harvest inspections, averaging over 4,000 inspections per year. The purpose of these inspections is to make recommendations on the implementation of BMPs and to enforce the SWQA.



## ***Riparian Forest Buffer Restoration***

In October 1994, the Chesapeake Bay Executive Council adopted Directive 94-1, which called upon the Chesapeake Bay Program to develop



a policy that would enhance riparian stewardship and efforts to conserve and restore riparian forest buffers. In 1996, The Virginia Forest Riparian Buffer Initiative was established with the goal to protect all streams and shorelines by forested or riparian buffers. Bay Program partners agreed to develop an implementation plan for their respective Governor by June 30, 1998, including benchmarks on how these goals and recommendations would be met. The resulting plan committed Virginia to restoring 610 miles of riparian forest buffers by 2010. It reaffirmed Virginia's pledge to protect the state's water quality and to restore the health of the Chesapeake Bay.

Virginia has restored three times as many miles of riparian buffers as its original goal and has done so well ahead of the 2010 target date. In December 2003, Governor Warner committed to restoring 3,200 miles of riparian forest buffers in the Bay by 2010. Virginia has now committed to a much greater effort on the order of 30,000 miles as part of the state's Tributary Strategies.

Several ongoing efforts seek to identify and target those stream segments most in need of buffer restoration. In addition to efforts on the part of Virginia's natural resources agencies, studies by various universities using remote sensing and geographic information systems have enabled agencies to target small watersheds where restoration is most critical to achieving Virginia's water quality goals.

#### Future Considerations

The Virginia Riparian Working Group will continue to work closely to fulfill the goals and objectives of the Riparian Buffer Implementation Plan. The Department of Forestry will continue in its efforts to strongly encourage and support riparian planting and protection on all appropriate state-owned lands. These lands have been identified, and

several sites have had buffers installed or had plans developed for implementation pending funding availability. Technical assistance from DOF, SWCDs, and NRCS will continue to be provided to these state agencies to restore their sites.



## URBAN PROGRAMS

Although only seven percent of the land in Virginia is considered urban, urbanization of forest and agricultural land is occurring at a rapid rate in many parts of the Commonwealth. This urbanized growth causes NPS pollution as the result of precipitation washing nutrients, sediment, and other toxic substances from the impervious surfaces that make up these areas.

DCR is charged in the Code of Virginia to "provide technical assistance, training, research, and coordination in stormwater management technology to local governments for the protection of properties and reduction in NPS pollution." The Virginia Stormwater Management Law enables localities to adopt comprehensive stormwater management programs and requires state agencies to control stormwater on active construction projects and the post-construction finished landscape. DCR staff provide technical assistance, comprehensive watershed planning advice, and training to urbanizing localities that have adopted erosion and sediment control, subdivision, drainage, stormwater,

and other land development ordinances that address stormwater management.

Furthermore, DCR staff directly review, approve, and oversee implementation of construction and maintenance plans for BMPs on state agency projects to ensure compliance with the Regulations.



## Erosion and Sediment Control

DCR implements the state Erosion and Sediment Control (ESC) Program according to the Virginia Erosion and Sediment Control Law, Regulations, and Certification Regulations (VESCL&R). The law is carried out cooperatively by state and local government agencies to control sediment and runoff from land disturbing activities. DCR implements the state ESC program according to the law as is codified at Title 10.1, Chapter 5, Article 4 of the *Code of Virginia*, regulations are found at Section 4VAC30-50, and certification regulations are found at Section 4VAC50-50 of the Virginia Administrative Code.

The ESC Program's goal is to control soil erosion, sedimentation, and nonagricultural runoff from regulated "land-disturbing activities" to prevent degradation of property and natural resources. The regulations specify "Minimum Standards," which include criteria, techniques and policies that must be followed on all regulated activities. These statutes delineate the rights and responsibilities of governments that administer an ESC

program and those of property owners who must comply.

DCR's ESC Program regulates land-disturbing activities on state and federal lands, as well as on a specific group of activities undertaken by utility, interstate and intrastate pipeline and railroad companies and private construction companies. DCR establishes statewide standards and guidance, periodically reviews local programs, and provides training and educational opportunities.

A network of local government operated ESC programs regulates most private projects involving a land-disturbing activity. There are 166 local ESC programs in Virginia. They include every county, city and many incorporated towns (some towns are covered by a county program). Specific components within local ordinances account for program administration plan review and approval, site inspection, and enforcement on locally regulated projects. Although administrative procedures vary by locality, the basic ESC program components are consistent statewide. DCR staff provides technical assistance through ESC plan review, on-site inspection, enforcement support, local program planning, and provision of technical and regulatory guidance and training.

#### Accomplishments and Initiatives:

In 2005, DCR staff reviewed 26 local government programs for consistency with the Erosion and Sediment Control Law and Regulations. Local programs consistent with the Law and Regulations enhance water quality by minimizing sediment and nutrients associated with land-disturbing activities from entering the Commonwealth's waters.

DCR staff conducted a total of 35 erosion and sediment control training classes. The classes include Basic Erosion and Sediment Control in Virginia, Erosion and Sediment Control for Inspectors, and Erosion

and Sediment Control for Plan Reviewers. Approximately 1,500 individuals participated in these training classes during the reporting period. Two statewide certification exams were conducted and approximately 500 people were tested. The pass rate for these tests was over 75%. In addition to the certification exams, DCR provides online re-certification programs. Approximately 275 individuals were re-certified through the online programs. Training and certification of individuals in erosion and sediment control improves water quality by educating professionals on ways to reduce the impact on water quality.

DCR also administers a Responsible Land Disturber training and certification program through online delivery of information, materials, and training. During the reporting period, approximately 2,700 individuals were trained and certified. Additionally, approximately 800 were re-certified through the online program. By making individuals responsible for land disturbance and offering training and information, this program improves awareness and helps ensure proper erosion and sediment control on construction sites.

Oversight of state agency land disturbing activities is another important element of the state's urban nonpoint source programs. During this reporting period, DCR staff completed approximately 175 plan reviews for state agency projects. Staff also completed approximately 670 project inspections covering over 1,600 acres. The Virginia Department of Transportation performed approximately 1,100 inspections based on annual standards and specifications approved by DCR. DCR staff inspected approximately 21 projects in response to complaints and to ensure compliance with the approved standards and specifications. DCR requires standards and specifications be submitted annually for linear projects

such as rail, gas pipelines, and power transmission lines. DCR reviews and approves these standards and specifications. In addition, DCR may exercise direct oversight of major projects. For 2005, approximately 30 companies submitted annual standards and specifications for review and approval.

Staff also responded to over 1,300 requests for technical assistance from local governments, state agencies, developers, and citizens. With regard to enforcement and compliance, staff responded to approximately 210 complaints by completing site visits and working with local programs to resolve the complaints. Although reductions have not been calculated, there are direct water quality benefits resulting from actions taken to resolve complaints and ensure compliance with the Law and Regulations.



### **Stormwater Management**

The Virginia Stormwater Management Program (VSMP) seeks to protect properties and aquatic resources from damages caused by increased volume, frequency and peak rate of stormwater runoff. Also, the program seeks to protect those resources from increased nonpoint source pollution carried by stormwater runoff. VSMP programs are implemented according to the Virginia Stormwater Management Act and VSMP Permit Regulations. The Act is codified at Title 10.1, Chapter 6, Article 1.1 of the Code of Virginia and the Regulations are found at Section 4VAC50-60 et seq. of the Virginia Administrative Code.

These statutes specifically set forth regulations regarding land

development activities to prevent water pollution, stream channel erosion, depletion of groundwater resources, and more frequent localized flooding to protect property values and natural resources. Stormwater management programs operated according to the law are intended to address these adverse impacts and comprehensively manage the quality and quantity of stormwater runoff on a watershed-wide basis.

DCR's VSMP staff develops technical criteria and policies to support statewide implementation of the program. DCR engineers serve as the approval authority for stormwater management plans for projects on state and federal lands and inspect these projects to ensure compliance. Staff engineers also help localities whether or not they have adopted a local stormwater management program in accordance with the stormwater act and regulations by reviewing ordinances and programmatic guidance, providing technical assistance to ensure compliance, and promoting innovative, cost-effective solutions for protecting natural resources.

The consolidation of the Commonwealth's stormwater management programs into DCR was initiated in the 2004 reporting period. The 2004 Virginia General Assembly unanimously passed House Bill 1177 transferring regulatory authority of National Pollutant Discharge Elimination System (NPDES) programs related to municipal separate storm sewer systems (MS4) and construction activities from the State Water Control Board and Department of Environmental Quality to the Soil and Water Conservation Board and the Department of Conservation and Recreation. The transfer of the programs became effective January 29, 2005.

As a result, DCR is responsible for the issuance, denial, revocation, termination and enforcement of

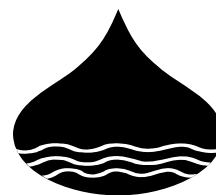
NPDES permits for the control of stormwater discharges from MS4s and land disturbing activities under the Virginia Stormwater Management Program. The Department of Environmental Quality continues to manage the remaining NPDES program. The consolidation of the Virginia's stormwater management programs into DCR should streamline program implementation, increase program efficiencies and compliance, build on successful online initiatives, and improve water quality.

#### Municipal Separate Storm Sewer Systems (MS4s)

Eleven large/medium (Phase 1) and 99 small (Phase 2) MS4s have been permitted in Virginia. DCR staff has completed annual report reviews for 10 Phase 1 and approximately 74 Phase 2 localities. In addition, DCR and U.S. Environmental Protection Agency staff participated in six program review audits for five Phase 1 and a single Phase 2 localities. DCR staff has also identified additional small MS4s that may qualify for permit coverage and are working with the identified operators to determine permit applicability and requirements.

#### General Permit for Discharges of Stormwater from Construction Activities (General Permit)

DCR staff is now responsible for processing registration statements for land-disturbing activities that are covered by the General Permit. For the period of January 29, 2005 through December 31, 2005, approximately 1,800 land disturbing activities were issued General Permit coverage. During this time period, DCR staff also completed approximately 500 site inspections for compliance with the General Permit.



## **MONITORING** **and TRACKING**

The overall goal of Virginia's nonpoint source pollution monitoring and tracking programs is to support the development, implementation and evaluation of the nonpoint source pollution management program. Monitoring and tracking activities measure the effectiveness of the management program to ensure that the beneficial uses of Virginia's waters are attained and maintained.

Monitoring and tracking of water quality conditions and the implementation of activities and programs that can improve water quality and natural resources conditions is an important aspect of the VA NPS Pollution Management Program. This report section includes a summary of monitoring and tracking activities in 2004 for the following programs and projects:

- NPS Water Quality Assessment
- VA NPS Assessment and Prioritization
- NPS Geospatial Data Development
- VA BMP Tracking System
- Adopt-a-Stream Program
- Citizen Water Quality Monitoring Program

#### **NPS Water Quality Assessment**

Water quality issues continue to plague the Commonwealth of Virginia, related mainly to increases in nonpoint source pollution. This situation highlights the importance of a well-coordinated, fully implemented Nonpoint Source Pollution Management Program to the continued health and protection of



Virginia's natural resources. Every two years the Department of Environmental Quality (DEQ) publishes a listing of all waters in the state where applicable standards are not being met. The next report is due in May of 2006. During 2005 work progressed in developing the list and the corresponding report. The 2004 305(b)/303(d) Water Quality Assessment Integrated Report (TMDL list) from DEQ indicated that 6,894 miles (of 50,537 miles) of freshwater rivers and streams, 89,896 of the 120,751 acres of lakes had impaired waters and 1,557 of 1,810 square miles of estuarine area had impaired water quality. Overall, 442 of the 494 watersheds in Virginia had impaired waters in them. The majority of these listings were due to nonpoint source pollution.

#### Water Quality Standards

In June, 2005 Virginia adopted statewide water quality standards for dissolved oxygen, chlorophyll-a and water clarity to meet nutrient reduction criteria for Bay and tidal tributaries. These standards are designed to protect migratory fish spawning and nursery, shallow water habitat for submerged aquatic vegetation, open water, deep water and deep channel water habitat for aquatic life. As an aid in achieving these new water quality standards, nutrient load caps have been set accordingly for point source discharges.

#### Virginia NPS Assessment and Prioritization

In preparation of the NPS component of the 2006 Virginia Water Quality Assessment Report (305b), DCR began the process of performing an assessment and prioritization of the hydrologic units in Virginia regarding NPS related variables.

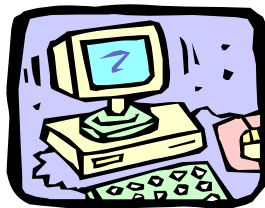
The assessment process is a modeling operation to calculate loads of NPS pollutants per hydrologic unit by land use. These loads of nitrogen,

phosphorous, and sediment are then used to rank all units on their NPS pollution potential.

Most of the work performed on the assessment in 2005 involved the development of the data required to operate the assessment model. Foremost amongst the long list of data and variables was updated land use / land cover by hydrologic unit, BMP measures by BMP type per unit for load reduction calculations, numbers of animals by type per unit, dominant agricultural crops per unit, manure spreading periods related to the animals and dominant crops, and data related to erosion calculations. Programming modifications were also made regarding model data format development.

For the prioritization portion a determination of the percent of all waters per unit that were impaired according to the 303d was made by water regime. Likewise a determination of the population served by source water intakes represented by their source water protection zones, and measures of aquatic species richness and diversity per unit were calculated.

The actual modeling, reduction factor calculations for all BMPs per unit, and 305b reporting will occur in early 2006.



#### NPS Geospatial Data Development

In 2005, technical resources of the Department of Conservation and Recreation continued to be developed and maintained to support the goals and objectives of the 1999 Nonpoint Source Pollution Management

Program. Staff worked to develop and enhance the various program databases, make data more accessible, improve tracking capabilities, and provide more immediate feedback to those participating in department programs.

2005 activities not associated with the NPS Assessment or BMP Tracking included:

- Made modifications as necessary to make the Virginia portion of the National Watershed Boundary Dataset (NWBD) match seamlessly with the NWBD of adjoining states.
- Completed a once through on the development of an animal database and began versioning of this product.
- Supported regional offices of the agency through the dissemination of data layers customized for their applications.
- Participated in the ongoing National pilot regarding development of an XML schema for all BMP data so as to enable its use through the EPA.
- Continued to provide updated and verified program information through the development of web pages and internet map services specific to program needs.

#### Virginia BMP Tracking

DCR developed a means to track BMPs in the late 1980s. Since that time the process has steadily improved in form and content. For the start of the 2006 Program Year in July 2005, a number of annual modifications to the BMP tracking program were made. The funding program types were revised to match Program Year 2006 funding sources; the FR-1, SL-8, and SL-8B incentive payment amounts were increased; a Voluntary BMP report was added; and two items were added to the quarterly budget reports to track transfer of funds between Soil and Water Conservation Districts.



### **Adopt-A-Stream Program**

The Virginia Adopt-A-Stream Program (VAASP) is a statewide program aimed at reducing litter while advancing citizen stewardship and understanding of the Commonwealth's precious waterways. Adopt-A-Stream promotes education, public outreach, citizen involvement, partnership and community capacity-building through Virginia's diverse constituencies. The waterway clean-ups supported by this anti-litter campaign provide a chance for local businesses, civic groups, watershed associations, churches, schools, environmental groups and scouts to work together or separately to do their part.

Founded in 1998, VAASP has had 16,565 volunteers from 452 groups to participate in the Adopt-A-Stream program. These groups have adopted 775 miles of stream and have removed 8,300 bags of litter since 1998. Objects most commonly recovered include: plastic bottles, aluminum cans, packaged food wrappers, cigarette butts, and other common finds such as tires, furniture and appliances.

During 2005, approximately 3,579 VAASP volunteers accomplished the following activities:

- 3,579 volunteers removed 1,435 bags of litter.
- Cleaned approximately 380 miles of streams
- 7 stormdrain stenciling groups stenciled an estimated 106 stormdrains



### **Citizen Water Quality Monitoring Program**

Citizen-led Water Quality Monitoring of Virginia's lakes, streams, and rivers is recognized as a vitally important effort to address local water quality issues. There are hundreds of groups and organizations throughout the Commonwealth that actively participate in some type of water quality monitoring program.

The Virginia Department of Environmental Quality (DEQ), partly through information provided by the Virginia Water Monitoring Council, has contacts for approximately 180 water quality monitoring groups in Virginia. Roughly there are 130 citizen monitoring organizations. Of these 130 citizen monitoring organizations, approximately 100 are currently monitoring. DEQ is committed to using data from citizen and other non-DEQ sources that meet quality assurance standards. In 2005, DEQ set an agency goal to use citizen monitoring data to assess the water quality of at least 3,000 stream miles by 2010 that were previously not assessed by DEQ.

Progress towards the assessment goal is already well under way due to the continued growth and sophistication of citizen monitoring. In many cases, citizen groups show the same level of quality assurance as DEQ. This is due in part to the continued success of the DEQ Citizen Monitoring Grant Program and technical support by DEQ staff. For the upcoming 2006 305(b)/303(d) Water Quality Assessment Report, DEQ received an unprecedented quantity of data from 22 citizen

monitoring organizations comprising of 68 citizen groups that monitored 815 sites. In addition, DEQ received a record number of 73 nominations from the public in 2005 covering portions of 46 streams and rivers in Virginia to aid DEQ in identifying areas to consider for follow-up monitoring. With the growth in the number of citizen monitoring groups, data from these groups is becoming even more important in helping to determine the health of Virginia's waters. The data collected in 2005 by citizen monitors identified several areas of concern. DEQ is currently evaluating these areas to help determine potential follow-up monitoring sites. The final follow-up monitoring list will be completed in the spring of 2006 and will be used by DEQ to set up monitoring site locations this summer.

One of the statewide organizations that have spearheaded citizen water quality monitoring in Virginia is Virginia Save Our Streams (VSOS). The main focus of VSOS is to train and certify new monitors, and to provide usable data to the state agencies. The Virginia Save Our Streams Program wants to help as many citizens as possible to participate in the process and become local leaders in the quest for clean water. In 2005, VSOS had 350 active volunteer monitors at 200 active monitoring sites. VSOS has 10 regional trainers who are conducting training sessions all year long. Through these trainers over 85 people were certified or re-certified to conduct monitoring activities.

The Alliance for the Chesapeake Bay is another group that leads a statewide volunteer monitoring effort in Virginia. The Alliance Citizen Monitoring Program is a statewide network that, in 2005, had 118 active and trained volunteer monitors from 13 organizations who perform weekly water quality tests at approximately 60 sites. This monitoring help tracks the condition of waters flowing toward the Chesapeake Bay. These dedicated

volunteers monitor rivers across the Chesapeake region in Pennsylvania, Maryland, and Virginia. Some have worked with the Alliance for more than ten years, watching their rivers through the seasons and regularly submitting the valuable data they collect.

Citizen-based groups, such as the VSOS and the Alliance for the Chesapeake Bay programs, conducted many training events in 2005. In 2004, the training sessions resulted in the training and/or re-certification of 506 citizen volunteers. Of these certified volunteers, 376 were trained in chemical monitoring and the remaining 120 volunteers were trained in detailed benthic macroinvertebrate procedures.



#### DEQ Citizen Monitoring Partnership for E. coli Study

In the summer of 2005, DEQ began to set up a volunteer monitoring program in twelve TMDL *E. coli* impaired watersheds. Five SWCDs and twelve citizen-volunteer groups partnered with DEQ in 2005.

The monitoring project consists of citizen volunteers who monitor for *E. coli* bacteria. The method to test for the bacteria is an inexpensive media called Coliscan Easygel™. Under this partnership, DEQ provides the Coliscan media, sampling equipment, and training to the volunteers. In return, the volunteers share the data with DEQ.

The benefit from this partnership over traditional sampling by DEQ is the increase in sampling sites in the watershed. This is because costs are low due to citizens volunteering their

time and the inexpensive cost of the Coliscan media. On average, DEQ is receiving data from ten sample sites on a monthly basis in each of the twelve watersheds.

The sample sites are helping to find tributaries that are contributing high levels of *E. coli* bacteria. This information is useful to our partners by helping to target more cost-share and education efforts into areas of the watershed that need the most help.

The volunteer monitoring is showing benefits not initially recognized by DEQ. One of the biggest benefits we are seeing is more interest by the local community on restoration efforts. Newspaper articles and people asking the volunteers and DEQ staff about the monitoring are helping to promote water quality education efforts. Additional benefits will arise as this program continues.



#### Statewide Volunteer Monitoring Coordination

In the fall of 2005 many of Virginia's active citizen water-quality monitoring groups began an effort to create a statewide coordinating organization that could help promote citizen efforts throughout Virginia. This initiative grew out of the fact that the past several years have presented many opportunities and obstacles to volunteer monitors across Virginia. Reductions in available funding, rigorous requirements from data users, lack of communication and other issues have taxed Virginia's organizations and limited their ability to pursue their missions – collecting meaningful water quality monitoring data. These issues necessitate the

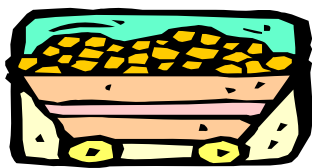
formation of partnerships like never before.

Two of Virginia's established training and monitoring organizations, Alliance for the Chesapeake Bay and Virginia's Save Our Streams, received grant funds to spearhead this effort. In the fall several coordinating meetings were held. The result was a consensus on identifying the positive aspects of coordinating the states monitoring efforts. It was determined that coordinating Virginia's volunteer monitoring organizations would:

- Provide new sources of funding by emphasizing the united monitoring strategy created by this entity,
- Develop a menu of viable volunteer monitoring methods for organizations across Virginia,
- Develop a menu of appropriate uses of volunteer generated data,
- Assist state agencies by filling in the gaps of water quality data,
- Create a place for consistent and reliable dialog and support for volunteer monitors,
- Provide technical resources to help new and existing volunteer monitoring organizations with their water quality monitoring program, and
- Harness the capacity of volunteer monitors to become educational resources and effective advocates in their community.

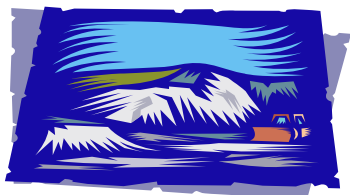
These efforts to coordinate volunteer efforts will continue throughout 2006.





## **RESOURCE EXTRACTION**

The Virginia General Assembly determined that uncontrolled resource extraction activities in VA from mining of coal and non-fuel minerals and the extraction of gas and oil, could contribute pollutants to water resources. The Resource Extraction section of the 1999 Nonpoint Source Pollution Management Program specified a long-term goal of "improving surface and groundwater quality in watersheds... by reducing NPS pollution associated with abandoned and orphaned resource extraction sites." Virginia's General Assembly enacted reclamation laws in 1968 to minimize the adverse effects of mining on the environment. Legislation was enacted in 1978, which established a non-coal orphaned land reclamation program.



### **Orphaned Land Program**

The Department of Mines, Minerals and Energy (DMME): Division of Mineral Mining (DMM) conducts the states Orphaned Land Program. Funds for the reclamation of orphaned mines are obtained from interest monies earned from a state managed industry self-bonding program. Mine operators participating in the program make payments into the Mineral Reclamation Fund based on the acreage disturbed by their operations. The fund assures that active mines will be reclaimed and participation is

mandatory under Virginia's Mineral Mining Law.

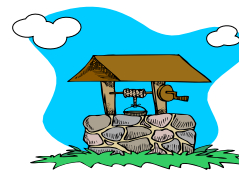
Orphaned lands are areas disturbed by the mining of minerals, not including coal, that were not required by law to be reclaimed or have not been reclaimed. More than 3,000 abandoned mineral mines exist throughout Virginia. Some of these sites may pose significant hazards to the environment and the health and safety of the public.

Techniques for conducting a systematic, comprehensive field inventory of nonpoint sources of pollution on abandoned mineral mines in state watersheds were developed by DMME. Using the Inventory and Implementation Program, DMME's Orphaned Land NPS Coordinator initiated efforts to reclaim high priority abandoned mineral mine sites in selected watersheds. This initiative is carried out with the agency's Orphaned Land Program.

Since 1981, DMM has completed the reclamation of 605 acres of disturbed land at 83 abandoned mine sites in Virginia. The total value of contracts awarded for orphaned mineral mine reclamation is \$2,990,807 through fiscal year 2005. There are approximately 3,000 abandoned mineral mine sites in Virginia and DMM has completed inventories on 1,787. The sites occur in all physiographic provinces and some sites were mined prior to the Revolutionary War.

In fiscal year 2005, 338 sites were inventoried with the support of Section 319 Funds administered by the DCR and EPA's Superfund Program. The Superfund Program supported an educational program whereby students from the University of Virginia, as part of their course work, inventoried orphaned land sites while gaining valuable field experience in assessing environmental and safety hazards.

In fiscal year 2005, reclamation was completed on one Orphaned Land Site and one bond forfeiture site. The total acreage reclaimed was five acres for orphaned and bond forfeiture sites.



### **Orphaned Well Program**

The state's DMME also manages Virginia's Orphaned Well Program, through its Division of Gas and Oil (DGO). The Virginia Gas and Oil Act defines "Orphaned Well" as "...any well abandoned prior to July 1, 1950, or for which no records exist concerning its drilling, plugging or abandonment." The Act establishes The Orphaned Well Fund for the purpose of plugging and restoration of orphaned wells. Money for the fund comes from permit surcharges that must accompany each application for a new permit. Orphan well sites are prioritized according to their condition and potential threat to public safety and the environment. Those that represent the greatest risk are given the highest priority for plugging and site restoration.

DGO has inventoried 120 orphaned well sites. Seven orphaned well sites and five bond forfeiture sites have been reclaimed encompassing 10 acres.

### **Abandoned Mine Land Program**

The Division of Mined Land Reclamation (DMLR) conducts an abandoned mine land (AML) reclamation program to reclaim coalmine sites that were abandoned or left inadequately reclaimed before December 15, 1981. Funding for the reclamation comes primarily from the federal Office of Surface Mining (OSM) via reclamation fees paid by the coal industry, although DMLR is realizing success in obtaining non-

federal funding for projects. DMLR maintains a statewide inventory of abandoned coalmine sites. The abandoned features are designated a priority ranking. Priority 1 and 2 features are viewed as extreme dangers and adverse human health and safety impacts, respectively. Priority 3 features are environmental problems that do not directly impact human health and safety. Federal guidelines for OSM funding require the reclamation focus be directed to the Priority 1 and 2 features before work is undertaken to accomplish Priority 3 reclamation. Inventory data show over 57,000 acres of abandoned mine lands in Virginia with an estimated cost to reclaim at \$440 million.

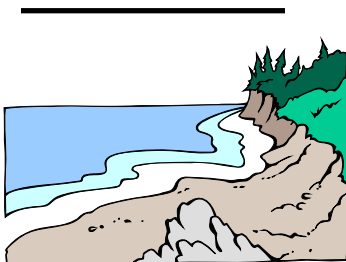
For 2005, DMLR reclaimed approximately 233 acres of abandoned coalmine lands. Not included in this estimate is the amount of abandoned mine land reclaimed through remining. Through this process, active coal operations remine abandoned sites and reclaim them to current standards. DMLR does not have quantified data on abandoned land reclaimed through remining, but is very confident in stating that remining reclaims far more land, especially Priority 3 problems, than the federally funded AML reclamation program.

During 2005, DMLR accomplished reclamation on 38 abandoned mine land projects. These projects eliminated extreme dangers and adverse human health and safety impacts. Through this reclamation, there is also an environmental benefit. Many of these projects are in watersheds containing streams that are on Virginia's 303(d) list of impaired streams. Reclamation of abandoned mine lands will help reduce the pollution loading in these streams.

DMLR successfully partnered with a number of stakeholders in 2005 to increase the amount of reclamation accomplished. Partners included the

Army Corps of Engineers, Tennessee Valley Authority, The Nature Conservancy, the NRCS, local SWCDs, and local watershed groups. DMLR has several pending grant requests, including requests to the Virginia Department of Conservation and Recreation and to the U. S. Fish and Wildlife Service. If funded, DMLR would accomplish reclamation on lower priority sites that would likely never be reclaimed via routine OSM grants.

The major concern for abandoned coalmine land reclamation is reauthorization of fee collection to fund reclamation efforts. Fee collection was set to expire September 30, 2004, but a continuing resolution agreed to in Congress extended the fee collection to June 30, 2006. Although the Senate and House of Representatives have taken some actions to reauthorize fee collection, passage of such of bill is not a certainty.



## HYDRO-MODIFICATION

Issues relating to instream and riparian habitat, channel stability, aquatic resources, and watershed planning have received increased interest and are developing as focal points for environmental action. Hydrologic modification is considered the alteration of stream flow by human activities. All hydrologic modifications, whether properly or improperly implemented, may result in nonpoint source pollution.

The use of coastal nonpoint program funds has provided an opportunity to accomplish several of the activities outlined in the Hydromodification Chapter of the 1999 Nonpoint Source Pollution Management Program document. The primary purpose of the Hydromodification Chapter objectives is to improve the design standards, specifications, and implementation of best management practices for stream restoration activities. This includes establishing a work group, developing an in-field stream classification system, and establishing in-stream flows, reference reaches, and technical standards. It has become a priority to minimize the adverse effects of hydrologic modifications on water quality throughout Virginia through the use of proper design methodologies and best management practices.



### INSTAR

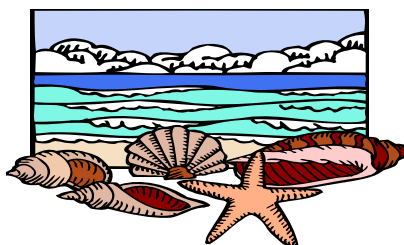
INSTAR (**I**Nteractive **S**Stream **A**ssessment **R**esource) is an Arc-GIS based tool developed by the Center for Environmental Studies at Virginia Commonwealth University in cooperation with the Virginia Department of Conservation and Recreation and the Department of Environmental Quality. This tool incorporates survey data on macroinvertebrates, fish, habitat and geomorphological assessments of randomly selected stream reaches throughout the coastal zone of Virginia along with development of stream models that serve as reference stream for the distinct ecological regions within the coastal zone. INSTAR allows users to access and manipulate an extensive, new dataset for stream reaches throughout the Virginia coastal zone.

Available data represent fish assemblages, macroinvertebrate assemblages, instream habitat assessment, and stream geomorphology. The application supports user-driven database queries, mapping functions, and quantitative biological and habitat assessments of stream reaches and hydrologic units, using algorithms and ecological models that compare selected sites to appropriate regional reference conditions. INSTAR is accessible from most computers via the internet and navigation throughout the application is relatively easy. INSTAR can be accessed at the following website: <http://instar.vcu.edu>



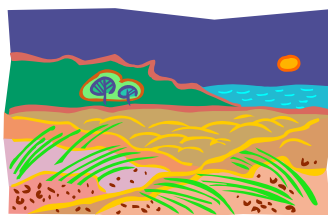
## **GRANTS and TECHNICAL ASSISTANCE**

Virginia has established a mix of regulatory and voluntary approaches that aim to control a changing blend of NPS pollution. Virginia tends to favor, and place greatest reliance on, the voluntary actions of its citizens to minimize land-disturbing actions that contribute NPS pollution to state waters. Voluntary approaches mean that citizens become informed about NPS pollution through education, and are persuaded and/or motivated to carry out best management practices. Some individuals are motivated by monetary incentives (tax credits, cost-sharing assistance, low interest loans, etc.), others may be motivated to preserve natural resources they manage and minimize NPS pollution for the sake of the environment. The “ambassadors” of the conservation message are largely the staff of government agencies and organizations.



## **COASTAL AND CHESAPEAKE BAY PROGRAMS**

The Commonwealth of Virginia has 120 miles of Atlantic Ocean coastline and approximately 2,500 square miles of estuary. In the late 1970's, declining water quality prompted the creation of the multi-state Chesapeake Bay Program. The *Chesapeake 2000 Agreement* outlines 93 commitments detailing protection and restoration goals critical to the health of the Bay watershed. Reducing nutrient and sediment loads to receiving waters through implementation of Tributary Strategies remains a high priority for Virginia. Tributary Strategies are water quality plans that are cooperatively developed with stakeholders in each river basin.



## **Tributary Strategies**

Virginia has been a partner in the restoration of the Chesapeake Bay since signing the first Chesapeake Bay Agreement in 1983. Virginia's involvement has continued with the most recent Chesapeake 2000 Agreement. Central to Virginia's Chesapeake Bay initiatives have been efforts to reduce excess quantities of nitrogen, phosphorus, and sediments. Beginning in 1992, Virginia began developing Strategies for nutrient and

sediment reductions in each of the bay's major tributary basins: the Shenandoah / Potomac, Rappahannock, York, James, and collectively, the creeks and rivers of the Eastern Shore.

In January of 2005, the *Nutrient and Sediment Reduction Tributary Strategy for Virginia's Chesapeake Bay Basins* document defining the nutrient and sediment reduction actions necessary to support the living resources of the bay watershed was released. Following public comments on draft Strategies released in April 2004, the document was developed to provide a watershed-wide overview of the actions required to achieve the ambitious goals of the Commonwealth and its partners. Individual nutrient and sediment reduction plans were issued in spring of 2005 for each of the major tributary basins. These Strategies were constructed to meet the nutrient reduction targets established by the Chesapeake Bay Program. The Strategies were developed in partnership with natural resource agencies and local stakeholders. Full versions of the Strategies are available on the Virginia Secretary of Natural Resources website: [www.naturalresources.virginia.gov](http://www.naturalresources.virginia.gov)



## **Virginia Coastal Program**

The Coastal Zone Management Act of 1972 established a federal-state partnership program to protect the nation's coastal resources. The Virginia Coastal Zone Management Program is a network of state agencies and local governments that have jurisdiction over the protection of the Commonwealth's coastal resources.



DEQ is the lead coordinating agency for the state and the VA CZM Program is supported with six DEQ staff. The VA CZM Program undertakes policy studies and grant funding initiatives to support better management of those resources. All funding for this program is provided by the National Oceanic and Atmospheric Administration (NOAA) through the Coastal Zone Management Act. The Virginia Coastal Program was fully approved by the NOAA in 1986, making the Commonwealth of Virginia eligible for federal funding for coastal resource protection. On June 26, 2002 Governor Mark Warner signed *Executive Order Twenty-three*, continuing the Virginia Coastal Program through June 2006 and outlined the role of DEQ as the lead agency for the program.

Virginia's coastal zone contains all 310,813 acres of the Commonwealth's tidal wetlands, and 909,097 acres (approximately 80%) of the state's nontidal wetlands. Protection of this resource is an important element of the Coastal Program. Since 1991, the Coastal Program has helped to acquire and preserve 1,802.88 acres of sensitive and significant coastal lands, including wetlands, sand dune systems, lowland and upland riparian buffers, and other wildlife habitat areas. The Virginia Coastal Program is also involved in a variety of planning and enforcement projects that improve the Commonwealth's ability to manage nonpoint source pollution and support several of the Nonpoint Source Pollution Management Program's goals.

During 2005 and early 2006 the Program undertook a considerable effort to assess the status of resources and management programs in nine areas: special area management planning, cumulative and secondary impacts from growth and development, coastal hazards, wetlands, public access, marine debris, ocean resources, energy and

government facility-siting and aquaculture. The program has been working with its partners to develop potential Strategies to address the identified needs in these areas. Based on available funding several of these Strategies will be funded during the period 2006-2010 with VA CZM funds.

The resulting report "VA Coastal Zone Management Program: Section 309 Needs Assessment – October 2005" is available at: <http://www.deq.state.va.us/coastal/documents/06309doc.pdf>. Several of the proposed Strategies address improving data availability, regulatory processes and policies for decision-making that can positively affect water quality, NPS and the way we develop land in our coastal zone. In addition, DEQ and DCR are partners in the Coastal Nonpoint Source Pollution Control Program, which was established through amendments to the Coastal Zone Management Act in 1990. In the last two federal fiscal years, the funding allotted to the Coastal Nonpoint Program has been dramatically reduced (70% reduction from federal FY 04 to FY 06). Please see the VA CZM web site for more information on the CZM network and our current initiatives: <http://www.deq.virginia.gov/coastal/>



### **Coastal NPS Pollution Control Program**

Virginia's Coastal Nonpoint Pollution Control Program continues to support the implementation of action items contained within the *Nonpoint Source Pollution Management Program* document. Development and implementation of the Coastal Nonpoint Source Pollution Control

Program (Coastal Nonpoint Program) is required by Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990. States are required to implement 56 "management measures" within six resource categories. Virginia submitted its program document in 1995 and received conditional approval in 1998.

Ongoing development of the Interactive Stream Assessment Resource was a major area of focus. In addition, a number of local government capacity building projects were completed during 2005. The Coastal Nonpoint Source Pollution Control Program also supported maintenance and implementation of the Clean Marina Program housed at the Virginia Institute of Marine Science.



### **Virginia Clean Marina Program**

There are approximately 1,000 marinas and 230,000 boaters in the tidal waters of Virginia that share in the scenic beauty, economic benefits and general use of Virginia's waterways. This extensive interaction between users and natural resources increases the potential for negative impacts to water quality from nonpoint sources of pollution. Marina operators can prevent and reduce these potential impacts through a series of BMPs.

The Virginia Clean Marina Program is a voluntary recognition program for marinas that take an extra step to protect the Commonwealth's coastal resources. The Virginia Institute of Marine Science (VIMS) has operated the Clean Marina Program (CMP) since 2000. The Virginia Coastal Zone Management Program has been the sole source of funding for this program, the first 3 years through

Section 309 funding and the last 2 years through the Coastal Nonpoint Pollution Control Program (Section 6217 of the CZMA).

The Clean Marina Program provides technical assistance to marina operators by working closely with them to meet the program criteria. Many marinas have employed innovative practices that have earned them Clean Marina Designation. The program also educates boaters through participation in trade shows and workshops. At the regional level, the program has been coordinating closely with Maryland, Delaware, Washington, D.C. and the National Park Services, as members of a regional workgroup, to identify and work on common goals concerning water quality in the Chesapeake Bay. Since 2001:

- 22 marinas have been designated as Virginia Clean Marinas
- 31 additional marinas have pledge to meet the criteria for designation
- Over 25% of the 16,800 boat slips in Virginia are currently participating in the CMP

#### **Coastal NPS Pollution Control Program and Water Quality Benefits**

Construction activities on private lands are not eligible for Coastal Nonpoint Pollution Control Program funding. As a result, projects implemented through these funds serve to enhance implementation of existing programs and build capacity and both state and local government levels. Given that most state and federal funding mechanisms are increasingly tied to measurable results, Coastal Nonpoint Source Pollution Control Program funding is increasingly viewed as critical to address needed programmatic changes. Ultimately, these types of changes can result in significant and lasting reductions in nonpoint source pollution.

#### **Coastal NPS Pollution Control Program Initiatives**

Local government projects completed during 2005 with Coastal Nonpoint Pollution Control Program funding focused on stream assessment and watershed planning.

- Onsite Sewage Disposal Plume Characterization Study - This project focused on assessing the utility and applicability of using a fluorometer to investigate onsite sewage disposal system failure. A fluorometer is a device that fluoresces in the presence of certain agents found in detergents. It is therefore thought to be a good indicator of human wastewater signatures. This technology was also tested as a tool for locating leaking sewage lines. Overall, the technology showed considerable promise and there are ongoing tests by the Department of Health and local governments to document its efficacy.
- Northern Virginia Onsite Wastewater Program - This project builds on significant work completed by the Northern Virginia Regional Commission to inform local decision-makers and elected officials regarding proper management of onsite sewage disposal systems. Informational material and workshops were held in conjunction with this project.
- City of Chesapeake Milldam Creek Assessment - using Coastal Nonpoint Pollution Control Program funding. This assessment documented the health of habitat and living resources, coastal features and water quality. The city of Chesapeake conducted an ecological assessment of Milldam Creek. The assessment will be used in developing future management plans and ordinances.
- Arlington County Donaldson Run Assessment - Arlington County has a number of streams that are experiencing significant stream bank erosion. This project resulted in a

comprehensive stream bank stabilization plan for a major stream in the County. Once implemented, this plan will result in significant sediment and nutrient reductions and will help restore stream health.

- James City County Skiffes Creek Watershed Plan - This project resulted in a watershed plan for Skiffes Creek. James City County has been a leader in developing local watershed plans. This plan is the latest in the County and it provides a good framework for helping to avoid or minimize future impacts to the creek.
- James City County Builders for the Bay - This project is part of an ongoing effort by the Alliance for the Chesapeake Bay, the Center for Watershed Protection, and the Commonwealth of Virginia to provide technical assistance to interested local governments regarding how to incorporate low impact development techniques and effective land management techniques into plans and ordinances.
- City of Fairfax Watershed Plan - Like all urban areas, the City of Fairfax is facing significant streambank erosion problems. A watershed plan was completed with Coastal Nonpoint Pollution Control Program. This plan will guide future watershed restoration efforts in the City.
- Henrico County Rocky Branch Stream Stabilization Plan - This project is part of a major initiative by Henrico County to assess streams and develop stabilization plans. The Rocky Branch Stream Stabilization Plan provides detailed engineering specification regarding actions that need to be taken to address stream bank erosion.

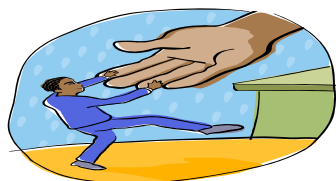
#### **Areas of Concern for CNP Program**

Without a significant infusion of resources, full implementation of the Coastal Nonpoint Source Pollution Control Program will remain an elusive goal. At the state level, there

is tremendous competition for limited funding. Commitments to Chesapeake Bay restoration and cleaning up impaired streams remain priorities. Without adequate funding, a clear mandate, or a major commitment from federal agency partners, there is limited impetus to commit staff and funding resources toward program implementation.

#### **Future Actions for CNP Program**

With limited and declining funding levels, the focus of the program over the ensuing year will be on maximize benefits from available funding. Virginia is moving forward with filling a program coordinator vacancy. This much needed staffing will enable the Commonwealth to continue to make progress on program initiatives and managing recently initiated projects. In particular, work will focus on make use of stream assessment capabilities for prioritizing program implementation and encouraging protection of healthy streams.



#### **Division of Chesapeake Bay Local Assistance**

The Chesapeake Bay Preservation Act was passed in 1988 because nonpoint source pollution related to the use and development of land was a growing concern in Virginia. The Chesapeake Bay Local Assistance Board was created by the Act and given authority and direction to develop water quality protection regulations for tidewater Virginia communities. The regulations provide criteria for designating sensitive lands and additional criteria for use by the localities in granting, denying or modifying requests to use and develop land within those designated

#### **“Chesapeake Bay Preservation Areas.”**

The Division of Chesapeake Bay Local Assistance (a division of DCR) addresses the impact of land use upon the waters that feed the Chesapeake Bay. Integral to their mission is the participation in the Multi-jurisdictional Chesapeake Bay Program and implementation of the Commonwealth of Virginia's Chesapeake Bay Preservation Act and the associated regulations. In 2005, Division staff continued to provide technical assistance and program oversight to local communities to their implementation of Bay Act regulations and requirements.

DCBLA continues to maintain an active role in education and outreach to help promote understanding and implementation of the Chesapeake Bay Preservation Act. During this reporting period, DCBLA staff provided information to localities through presentations at regional and local meetings, field investigations, and regular guidance. DCBLA staff continued participation with other state agency staff on the Virginia Chesapeake Bay Interagency Workgroup, Nonpoint Source Advisory Committee, the Watershed Planning and Permitting Coordination Task Force, the VDOT interagency project review committee, and the Coastal Policy Team, the LID task force and workgroup coordinated by DEQ, and the Corps of Engineers.

In addition, staff has continued to be involved in the various activities of the interstate Chesapeake Bay Program. This involvement includes participation in the monthly meetings of the Land Growth and Stewardship Subcommittee, the Development, Redevelopment and Revitalization Workgroup and the Watershed Assistance Workgroup, the Forestry Workgroup, the Nutrients Subcommittee, and the Urban Stormwater Workgroup.

DCBLA staff has also played a vital role in the Tributary Strategy process. Each staff liaison attends the Tributary Strategy meetings within their region and serves as co-leaders with other DCR staff. Other DCBLA staff members serve on the Tributary Steering Committee and provide input on nonpoint source issues and local government practices.



#### **Chesapeake Bay Grant Program**

This year, DCR awarded approximately \$500,000 to local governments and conservation districts, for implementation of various projects that will result in nonpoint source pollution reduction. In addition to providing funding to support Virginia's Watershed Conservation Roundtables, funds were awarded to localities to restore riparian buffers, conduct green infrastructure training and provide assistance to the public in pumping out septic systems. All of these projects will result in significant reductions in nutrients and sediments flowing to Virginia's tributaries of the Chesapeake Bay.

Additionally, DCR facilitated the implementation of over 18 projects that were funded to implement/showcase Low Impact Development (LID) techniques such as rain gardens, green roofs and other bioretention practices. Several projects have been completed.

The Alliance for the Chesapeake Bay partnered successfully with SunTrust Mid-Atlantic to construct a green roof



at the headquarters located in downtown Richmond (Photos 1-2 on the next page). The constructed green roof is currently Virginia's largest, covering 11,800 square feet, as well as the first public demonstration site for the Richmond area. Over 18,000 drought tolerant sedums were planted and the green roof is expected to have a lifespan of approximately 40 years. A ribbon cutting ceremony was held to open the site to the public on September 13, 2005.

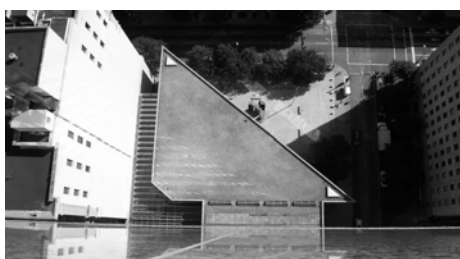


Photo 1 – Before Green Roof Installation - SunTrust Mid-Atlantic



Photo 2 – After Green Roof Installation - SunTrust Mid-Atlantic

Several other LID projects also achieved successful completion this year. Albemarle County Government Center green roof (9,000+ square feet) in Charlottesville was completed in early July. Alexandria Health Department Building (10,000+ square feet) was completed in December 2005. The City of Falls Church completed all elements of their project by September 30, 2005. The resurfacing and redesign of the City Hall's parking lot was completed and a rain garden and grass pavers were installed in the City's rear parking lot. A stormceptor, urban filtration BMP has been ordered and will be installed as an ongoing part of the larger City

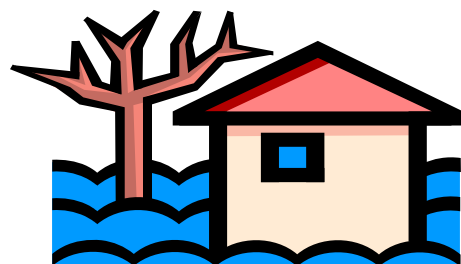
project. Two permanent educational signs were installed adjacent to the rain garden and grass paved area and next to the cisterns at the property yard. Another small rain garden area was created within the parking lot.

DCR's interest was to fund projects that exceeded the minimum expectations required by law such as changes to plans for a new development to incorporate LID practices or the establishment of structures, features, or programs on existing developed lands that result in increased NPS pollution reductions. Through a competitive request for proposals process, a total of eighteen projects were selected and offered funding awards.



## **STATEWIDE PROGRAMS/ INITIATIVES**

This section of the report briefly summarizes some key statewide programs and initiatives that do not easily fit with a single programs area in the *Virginia Nonpoint Source Pollution Management Plan*.

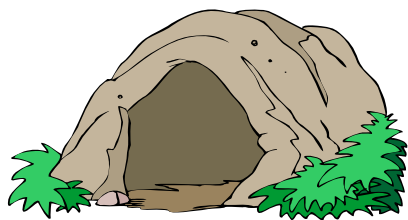


### **Groundwater Protection**

The Department of Environmental Quality's Office of Groundwater Protection carried out the varied and successful activities supported by the Federal Clean Water Act Section 106 Groundwater Protection Grant. DEQ provided funding to Westmoreland, Lancaster, Northumberland, and Richmond Counties to initiate household hazardous waste disposal programs. There were 174 individuals who participated with over 9,000 pounds of hazardous materials collected and properly disposed of by Care Environmental, Inc.

DEQ also supported DCR's Karst Program through a small grant for Project Underground activities. Additionally, funds were earmarked for seven Groundwater Festivals. These festivals are a continuing tradition with DEQ and our cooperators and are very popular with teachers and students alike. They are an excellent venue to teach Virginians about groundwater resource protection and nonpoint source pollution impacts.

Finally DEQ submitted and received EPA approval on a voluntary statewide Wellhead Protection Program. The program targets groundwater based public water supplies and is considered an important component of a drinking water quality management framework. Funding has been earmarked in a competitive process for protection implementation projects. For more information on DEQ's Groundwater Protection Program or the State's Wellhead Protection Plan, visit the website: [www.deq.virginia.gov/gwpsc](http://www.deq.virginia.gov/gwpsc)



## **Virginia's Karst Program**

The Virginia Karst Groundwater Protection Program is funded by a Section 319 grant and managed by DCR's Division of Natural Heritage. The Karst Program works with groundwater and nonpoint source pollution problems in the 27 karst counties of Virginia. Dissolution over geologic time of limestone and dolostone has produced a karst landscape characterized by sinkholes, sinking streams, caves, and large springs. The interaction of surface and groundwater make such areas susceptible to water quality impairments, flooding, land surface collapse, and degradation of natural heritage resources. Land development, agricultural practices, on-site waste disposal, and highway operations all contribute to the NPS contamination of karst aquifers.

In 2005, the Virginia Karst Program continued to work collaboratively with citizen, agency, business, and conservation stakeholders to address a range of nonpoint source pollution issues in Virginia's karst landscapes in the western part of the state. The program relies equally on technical assistance, education and training, and data development to achieve its mission. Accomplishments in each of these areas are highlighted below.

### **Technical Assistance**

In 2005, the Karst Program provided technical assistance to state agencies, local and county governments. Through DCR's Office of Environmental Project Review, approximately 300 proposed development projects were reviewed for potential impacts to karst

groundwater, biota, and significant caves. Karst Program staff provided extensive guidance and field assistance to minimize the likelihood of adverse environmental impacts from the proposed Jewell Ridge Gas Transmission Pipeline

Staff also performed detailed review of Joint Permit Application by the Frederick County Sanitation Authority for Water Withdrawal from Blue Spring, which identified methodological flaws in the permit application. Staff performed fieldwork to test hydrological hypotheses, demonstrating, through tracer dye studies, connection of the spring run to a cave stream of high biological significance. A detailed written summary was provided to DEQ's Valley Office. This work led to the discovery of a new population of globally rare cave beetles (*Pseudanophthalmus parvicollis*), endemic to the Shenandoah Valley, which had not been seen for nearly 80 years.

In other projects related to streams on the 303(d) list, Karst Program staff continues to work with DEQ staff and private contractors on a case-by-case basis to ensure that karst issues are considered during TMDL development. Assistance was provided to DEQ and the Department of Biological Systems Engineering at Virginia Tech to evaluate the complex hydrology of the North River-Briery Branch-Dry River system, which recharges the karst aquifers of the western Shenandoah Valley in Rockingham and Augusta counties.

In 2005, Karst Program staff collaborated with DCR Nutrient Management staff to evaluate suitability of a potential poultry litter land application site in Craig County that included highly sensitive and biologically significant karst features. Staff worked with Blue Ridge SWCD and a group of volunteers to implement BMP WQ-11. Final implementation was delayed until

2006 due to weather. Program staff also reviewed the Virginia Outdoors Foundation's Conservation Easement properties for sensitive karst features, made several field visits, and worked with VOF staff to document features and incorporate their protection into easements.

Karst Program staff coordinated and led the gating of Bacon Cave in Lee County, which harbors a newly (in 2003) discovered population of the Gray Bat (*Myotis grisescens*). They obtained funding for the project through DMME as part of a mine portal closure settlement.

Another goal of 2005 was the better integration of karst specific BMPs into the stormwater management program. Assistance was provided to the Virginia Cave Board Sinkhole Protection Committee to determine stormwater management needs and gaps for karst areas.

During 2005, Karst Program staff made numerous site visits in response to citizen concerns over karst issues, including:

- Reductions of stream flow on Swover Creek, Shenandoah County
- Site suitability for home construction activities, Shenandoah County
- Proposed Luray Landing subdivision in Page County, with DCR Urban Program staff, to address stormwater management issues on karst

In addition, Karst Program staff performed field visits with Mountain Soil and Water Conservation District staff to identify and prioritize sinkholes in Alleghany, Bath, and Highland counties for remediation under Virginia Water Quality BMP WQ-11.

### **Education, Training, and Outreach**

Education and outreach efforts during 2005 helped thousands of Virginians learn how to better protect their karst water resources. Six Project Underground workshops, attended by

a total of 100 educators, where held in 2005. These teachers will reach over 4,700 students with karst education information.

The Karst Education Coordinator participated in additional events that reached a more varied audience, and continued to serve in a leadership role on the Virginia Resource Use Education Council Committee. Specifically, the Karst Education Coordinator and Karst Program's staff accomplished the following education, training and outreach activities in 2005:

- Organized and led the first annual, week-long Chesapeake Bay Mountain Academy held in August, attended by an additional 23 teachers, who received college credits for the course through a partnership with Virginia Commonwealth University.
- Worked cooperatively with the Cave Conservancy of the Virginias, the West Virginia Cave Conservancy, the West Virginia Department of Environmental Protection, and Virginia Tech, to help organize and present two "Growing Communities on Karst" Conferences, one in Lewisburg, WV and the other in Shepherdstown, WV, attended by both Virginia and West Virginia stakeholders.
- Presented at thirteen outreach events, including the Soil and Water Conservation Society, the Virginia Environmental Education Association, the Virginia Environmental Health Association, the Virginia Association of Science Teachers, Virginia Tech Hydrogeology Class, and the Virginia State Fair.
- Assisted Virginia Cave Board in editing the December 2005 issue of the Cave Owners Newsletter, distributed to approximately 1000 individual owners of Virginia caves promoting karst conservation and stewardship.

### **Data Development**

Data development activities during 2005 worked towards having more detailed information on karst topography throughout Virginia. Specifically, staff accomplished the following activities:

- Worked with the Virginia Speleological Society to perform dye trace studies to delineate recharge zones of cave streams and karst springs
- Performed biological inventory work in cooperation with The Nature Conservancy, the US Fish and Wildlife Service, and the Department of Game and Inland Fisheries to better document the distribution of rare, threatened, and endangered fauna in Virginia's karst
- Continued development of the Virginia Karst Hydrology Atlas, which now contains the results of over 200 individual tracer dye experiments performed in Virginia, and which will be available online to select conservation partners in 2006. The Virginia Karst Hydrology Atlas is a web-based GIS resource through which the majority of data on karst hydrology in Virginia will be available to citizens, local governments, agency staff, and consultants. Although such documents are typically published in hard copy, the digital only Virginia Karst Hydrology Atlas will be updated continuously as new findings are made and new areas are studied, dramatically increasing its value.
- Grant proposal to Cave Conservancy of the Virginias was developed and funded to support 2 Karst Protection Assistants to delineate conservation sites for Virginia's designated significant caves, which will serve as screening tools protecting these caves from nonpointsource and other contamination.



### **Floodplain Management Program**

The Floodplain Management Program of DCR supports all efforts that promote sound floodplain management practices. This includes federal, state, and local initiatives, and specifically, the efforts of the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP). For flood insurance to be available through the NFIP, the Commonwealth of Virginia and individual localities must agree to participate in sound floodplain management activities that meet the minimum standards of the NFIP and its regulations. Local governments must adopt a NFIP compliant regulation and commit to its enforcement. There are 270 communities that currently participate in the NFIP and 16 local governments that do not participate. The number of new NFIP communities has not changed since 2002.

DCR's Floodplain Management Program staff provides leadership, training and technical assistance to local governments to ensure that local floodplain programs meet or exceed the minimum standards of the NFIP. The program also supports all floodplain management initiatives within the Commonwealth, including initiatives of the U.S. Army Corps of Engineers, NRCS Emergency Watershed Protection Program, and the following FEMA program's: Community Assistance Program, Hazard Mitigation Grant Program, Community Rating System, Flood Mitigation Assistance Program, and Cooperative Technical Partnerships (a mapping initiative).



During 2005, there was one staff vacancy in DCR's Floodplain Management Program for about a four-month period, which had an impact on the number of technical and planning assistance contacts/visits, and the number of permit applications that program staff was able to conduct. The impact of this vacancy was compounded by the necessity for staff to respond to the flooding that occurred in the Gulf Coast as a result of Hurricane Katrina as part of the national Emergency Management Assistance Compact that Virginia is part of. Despite these setbacks, the program accomplished the following:

- Conducted 27 Community Assistance Visits (detailed evaluations of local floodplain programs and ordinance enforcement);
- Conducted 15 Community Assistance Contacts (evaluations of local floodplain programs and ordinance enforcement performed on the phone);
- Conducted 8 Planning and Technical Assistance Visits (site visits to assist community officials and/or citizens with interpretation of floodplain ordinances or NFIP regulations);
- Reviewed 42 floodplain management ordinances that are documented in FEMA's Community Information System (CIS);
- Revised two program guidance plans for the next five years that were required to be updated by FEMA for program elements – one plan was for implementation of a statewide floodplain mapping initiative and the other was a strategy to enhance current operations in providing assistance to communities for compliance;
- Responded to 221 technical and planning assistance requests from community officials and citizens, consultants, and state officials;
- Developed a grants manual for the Virginia Flood Prevention and Protection Assistance Fund;

- Developed legislation for measures to limit development in dam-break inundation zones;
- Finalized development of the Virginia Floodplain Management Plan, Virginia Citizen's Guide to Floodplain Management, and Virginia Local Official's Guide to Floodplain Management.
- Conducted and participate in 10 technical presentations/training on floodplain management at workshops and conferences; and
- Reviewed over 100 applications under the 401/404 Joint Permit Application process and VDOT's Interagency Coordination process.

of corrective actions plans in impaired streams.



## **FUTURE ACTIONS**

The considerable number of impaired waters and the challenge of restoring the Chesapeake Bay and its tributaries represent major challenges for the Commonwealth of Virginia. In addition, issues related to funding availability and flexibility will continue to present a challenge during the ensuing year and beyond. In the long-term, meeting the water quality challenges facing the Commonwealth will require new levels of funding and new thinking about how to reduce the water quality impacts of land development. For the future, Virginia has established the goal of partially or fully restoring 11 waterbodies by 2012. For the ensuing year, the focus will remain on implementation of the priority elements of the Nonpoint Source Pollution Management Program, Chesapeake Bay restorations, and the implementation

